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An Evaluation of Two Special Purposes of Junior High School: Economy of Time and Bridging the Gap

by

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PREFACE

Changes in our American schools are frequent. Our assumption is that the change is an improvement but there are few instances where the condition before the change or after it was carefully enough evaluated so that progress or regression could be claimed with assurance. The junior high school organization has been accepted with such unusual alacrity that about two-third of the cities in the United States of one hundred thousand population have adopted it or are moving in that direction. To what extent is this new organization an improvement over the organization which it displaced or is displacing? To what extent is it achieving the ends for which it was organized? Do results show that the enthusiastic supporters of this movement are justified in the extravagant claims which they have made?

It is time to begin taking stock while there still remains enough of the old organization to set over against the new. This study is among the first efforts at an evaluation of the degree to which the junior high school is achieving the outcomes which it has promised. While this study gives data on only two of the objectives set for the junior high school, it is hoped that it will stimulate other studies to answer the question of how much improvement, if any, we have brought about through this new administrative organization.

THOMAS J. KIRBY,
Professor of Education

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To Doctor Thomas J. Kirby, the writer wishes to express his appreciation for constant guidance and friendly counsel in making this study.

To his wife, Roletta Olga Fritz, the writer is indebted for constant encouragement and for assistance in the preparation of the manuscript.

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SUMMARY OF THE STUDY

According to the progress rates obtained from the data of the Bureau of Educational Research, the 8-4 type schools are a little more economical of the pupils' time in grades 6, 7, and 8 than the 6-3-3 type schools. The size of the school systems may have some relation to this finding, since the large cities were all of the 6-3-3 type. These data are believed inadequate for an accurate study of progress in grades 7, 8, and 9.

According to the progress rates obtained from the data of the main portion of this study, the 6-3-3 type schools are more economical of the pupils' time in grades 7, 8, and 9 than the 8-4 type schools. The saving of time occurs in half-grades 7B, 9B, and 9A. About three-fifths as many semesters were lost in grade 7B by pupils in 6-3-3 schools as were lost by an equal number in 8-4 schools. About one-half as many semesters were lost in grades 9B and 9A by pupils in 6-3-3 schools as were lost by an equal number in 8-4 schools.

According to the progress rates obtained in this study, the gap between grades 8A and 9B is much smaller in 6-3-3 schools than in 8-4 schools. But a large gap is found in the 6-3-3 schools between grades 9A and 10B. Also if the gap is considered as the point of entrance to senior high school, then it is larger in 6-3-3 schools than in 8-4 schools. Therefore, it appears that the 6-3-3 type or organization does not actually bridge the gap, but that it does postpone it one year.

CHAPTER I

THE PROBLEM AND THE METHOD

1. Statement of the Problem

Among the supposed advantages resulting from junior high school are (1) economy of time through improvement in pupil progress and (2) bridging the gap between the grades and senior high school. This study endeavors to measure the degree to which junior high schools accomplish these two special purposes.

The amount of economy of time[1] is determined by a comparison of the progress rates in 6-3-3 schools with the progress rates in 8-4 schools, as found in grades 7, 8, 9, and 10. The degree of bridging the gap is determined by a comparison of the progress rates, in both types of schools, in the grades on either side of the point of entrance to senior high school.

This study makes no effort to evaluate the work of the two types of organization. It is interested in the probable cause of any measurable differences in progress rates, but does not endeavor to show that one type of organization is better than the other. A more rapid progress rate does not necessarily mean a better school system; it might even mean the reverse. Progress rate is by no means the only or total measure of the quality of a school system. It is but one criterion of the extent to which a school is adjusting itself to the needs and abilities of the pupils who attend it.

2. Method of Securing the Data

Schools were studied in six cities with populations ranging from 40,000 to 200,000, five of them in Iowa and one in an adjoining state. The pupils' records were copied during a personal visit of the investigator to each of the six cities. It was necessary to adapt the method of study in each city to its particular type of record and to its manner of filing the records. For this reason data from the different cities cover neither the same years nor the same proportion of the total records of the city. However, on account of the careful method of sampling and proportional weighting of each group of records (which will be described later in detail), the investigator believes that there are no great errors in the final results.

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[1] Economy of time also refers to curriculum readjustment and the introduction of former high school material into grades 7 and 8, with a resulting earlier completion of such material. Economy of time in this sense is not treated in this study.

It would, of course, have increased the reliability of the study to have had a uniform type of record covering exactly the same years in all the cities, but it is obvious that one must study the records which actually exist and not those which he would like to find. It is a regrettable fact that in only two of these comparatively large cities were the school records in such condition that they were convenient and adequate for a study of this kind.

Where individual pupil records were available, the facts wanted from the records were copied on large tabulation sheets sixteen by eleven inches in size. These were ruled both horizontally and vertically with heavy lines an inch apart and light lines one-fifth inch apart. The items copied were transcribed in code in such a manner that a single line of the sheet contained the complete record of one pupil, with eighty pupil records on each sheet. A board was devised which was seventeen inches long and twelve inches wide, with grooved strips along the sides to hold the sheets and a copy of the code. The code was written on a section of a tabulation sheet, fastened on heavy cardboard, covered with celluloid, and placed on top of the tabulation sheet under the grooved strips, and was moved down the page as the records were copied. Since each vertical column on the sheet corresponded to a particular item of the code, and since the code was always next to the line on which one was recording, there was little danger of error through copying an item in the wrong column. When a page was filled with the records of eighty pupils, all the entries of the same item were found in one vertical column and were in form which facilitated tabulations and the totaling of results.

The investigator handled all the pupils' record cards himself and read off the items wanted to a helper, who recorded them under his immediate supervision. Most of the recording was done by two assistants who had been carefully informed of the full purpose and method of the study. One of these helpers had taught school and had had several years of experience as a stenographer. The other was a young man who had just completed a course in the law school of the University of Iowa. Other persons assisted in recording small groups of records. This method appeared to give a maximum of both efficiency and accuracy, since checking the records of progress against those of date of entrance and those of attendance revealed almost no inconsistencies in the copies made on the sheets. Some of the items copied are not summarized in this study, but were of help in securing a better understanding of the items which are included here. Two such items are attendance and subject failures.

3. Errors in Usual Methods of Securing Data

A word should be said in justification of the techniques used in securing the records for this study. The method of a personal visit to each school studied was both slow and expensive and it greatly limited the number of pupil records which could be secured. But it was adopted because of apparent errors in the method commonly employed of asking teachers or other persons to fill out progress blanks to be returned to the investigator.

In the first place, there is less likelihood of error when one person conceives and carries out a task than if he tries to explain to a number of others just how he wants them to help him do it.

Then, in filling out any questionnaire or blank, there is the error due to the human element—the natural tendency to make "my school" appear better than it really is. In spite of the teacher's effort to take an objective attitude, results are likely to be somewhat colored in her favor.

Third, teachers are not particularly interested in filling out the progress blank. They do not understand much about it and are likely to feel that it is an extra task, a favor to someone whom they do not know, and not so very important.

Fourth, and most important, the use of progress blanks usually makes it necessary for the investigator to omit many of the records returned which are obviously incorrect or non-checking. Freden used 38,144 records after having sent back many for correction; 10,296 had to be thrown out entirely (21, p. 9). Odell used 67,000 records after sending 10,000 back for correction, and correcting others by "computing" or by inference (33, p. 10-11). The records which are irregular or incomplete are the very ones that are most important in a study of progress, yet they are the ones which a teacher does not understand when she fills out a progress blank. It takes considerable thought and study to translate such records to a progress blank and be sure that they are correct. The tendency, therefore, is to omit them entirely, or to copy them in some easy form which is approximately correct.

Studies made by having pupils fill out their own records of progress are probably not reliable because of the tendency to make one's own record appear as favorable as possible, even when it is not signed, and because pupils actually do forget.

When only the records of those pupils who have spent several years in the same school system are included in a study, the resulting progress rates are probably much higher than if the pupils who have been in the system for short periods are also included, for those who move frequently, or who are out of school for semesters or parts of semesters, are the ones who are less successful in school than the average (38, p. 385).

If those pupils who drop out or are transferred during the semester are not taken into account, the progress rates are probably an overstatement of the success of the school as a whole. Very frequently those who drop out have been doing poor work for some time before they decide to quit.

If progress rates for the separate grades are obtained by a study of the records of only those pupils who are attending a school system during a single semester, the results are inaccurate especially for grades above the sixth. This can best be made clear by the use of an illustration in which we assume an enrollment of 100 for grade 9, seventy for grade 10, fifty for grade 11, and forty for grade 12. Also assume that all of these records are complete back to school entrance in grade 1 in this city. Then the number of pupil records for each grade from 9 to 12 inclusive will be shown in the following scheme:

Enrollment	9	10	11	12
in Grade 9	100			
” 10	70	70		
” 11	50	50	50	
” 12	40	40	40	40
Total Records	260	160	90	40

If the three classes which are now in grades 10, 11, and 12 each had an enrollment of 100 when they were in grade 9, then 400 pupils have been enrolled in grade 9 during the last four years. But our study includes only 260 of these. Likewise, if the enrollment of each class when in grade 10 was seventy, then a total of 210 pupils have been enrolled in that grade during the last three years; but our study includes only 160. How successful were these

140 pupils with missing records in grade 9 and the fifty whose records we do not have in grade 10? Since these are the pupils who have dropped school, we can well assume that they were the less successful of the 400 in grade 9 and of the 210 in grade 10.

But in most progress studies all these records are omitted, and the resulting progress rate in each of these grades is much higher than the total records would give. The same type of error will be found in grades 8, 7, and possibly 6. Progress rates obtained by such methods are probably not accurate. It is only by including the records of all pupils for each year studied, or an adequate sampling of them, that a true measure of progress for a school or city can be obtained.

4. ELIMINATION OF ERRORS

This study does not assume to be free from all the errors just explained, but the technique used was chosen because it does eliminate some of them; and corrections have been made for others which could not be eliminated. The complete method is described here in some detail for the benefit of those who may wish to improve upon it in making similar studies.

There were very few records which had to be omitted entirely. In less than a dozen cases was the record so incomplete or so obviously incorrect that it could not be used. The incomplete items could usually be supplied by a careful study of the record as a whole, and certain items were checked by comparing the two cards which were sometimes available for the same pupil.

Interpretations were all made by the investigator, hence if an error was made in interpreting any point it would be of the same type for all the cities studied, and would have little effect in making comparisons between cities.

A plan was followed whereby systematic samplings of all groups were taken, giving a correct proportion of the records of those who had dropped school, those who were now in school, and those who had graduated. The samplings from each group were weighted before computing the final progress rate for each grade.

5. ERRORS PROBABLY REMAINING

There are a few shortcomings in the method employed, and one or two possible sources of error which should be pointed out.

It was difficult to give a uniform interpretation to the different types of record cards in use in the different cities and, in a few cases, in different buildings of the same city; also cards in the same city were different for different years. But in such cases interpretations are more likely to be accurate and consistent when made by a single person than when made by a number of teachers.

The number of records which could be studied was limited by the slowness of the method. However, it is probable that this smaller number of records, with the technique used, depicts the facts more accurately than would a larger number of records obtained by the use of the common method of a progress blank.

There are possible errors due to inadequate samplings of the records; yet a sampling of every fourth or fifth card probably introduces much less error than does the omission of irregular and non-checking records in a study made by the use of progress blanks.

There is also the possibility of an error due to the difference in the years covered by the records from different cities, since progress rates have tended to increase during the last ten years (9, pp. 14-16). The data from the four 6-3-3 systems cover eight years, five years, four years, and two years respectively. In the 8-4 systems the records cover the last ten years in two cities, and seven of the last eleven semesters in the third. The possibility of this error was foreseen at the time the records were collected, but the work of separating the cards according to particular years was disproportionate to the probable rewards. However, the progress rates of the 8-4 cities in which the records cover a ten-year period are found to be slightly higher than the rates in the city where only recent records were used. Therefore, there is probably no appreciable error in comparing the rates of the 6-3-3 cities with those of the 8-4 cities because the years are not identical.

6. Interpretation of Records

A record marked "dropped," with no record of progress or failure in the half-grade in which it was shown, was not counted at all in determining the progress and the failures. One could not be certain of the exact meaning of the entry, as it often referred to a transfer.

A record marked "transferred" with no record of progress or failure in the half-grade in which it was shown was not counted in determining progress or failures.

A record marked "incomplete" for a semester was considered a failure if the attendance record showed that the pupil had been present at least 70 days of the semester. This makes a smaller progress rate in 9A than in the other grades[2] of the junior high school, because pupils who fail only an occasional subject during their junior high work and who do not lose a half-year of classification on their record, come up to the last semester of junior high with more conditions in their work than they are able to remove by the end of the semester. They have not completed the junior high course but are often allowed to go on to senior high school with the understanding that they shall make up this work later. The subject failures which make their work incomplete in 9A may have been made in grades 7 or 8, but they are credited to 9A.

A record marked ''conditioned'' was counted as a failure. There were very few of these.

A record which did not clearly show whether the pupil had failed or progressed and for which only a doubtful interpretation could be made, was marked with a question mark in that half-grade and was omitted in totaling the results for the half-grade. Since the best that one could do in the case of incomplete records was to guess at their meaning, it seemed most advisable to omit them entirely. This may have resulted in progress rates slightly higher than they should be in one or two cases.

These incorrect or incomplete records may be typical of the total of the group in which they are found, and merely the result of carelessness on the part of the teachers who made the entries. However, it is more probable that they are records of pupils who are poorer than the average, and for whom the entries were doubtful because of irregularity in the work or attendance of the pupil.

Records of attendance in summer school were also copied. Summer school is time spent in school and presumably results in progress. But just what weight to give to summer school is not clear. Most of the summers are simply additional time required to make up a partial deficiency and do not result in skipping a half-grade, nor in removing a failure of promotion. Therefore, the gross number of summers credited to each half-grade is given in the tables, but the number of summers that have resulted in progress is not given.

Where a summer resulted in enough credits to enable a pupil to earn a promotion, the pupil is credited with a skip, resulting from the summer. He is considered as having spent no time in earning the semester of progress, but the summer is added to the total of summers. Where a pupil has failed a half-grade and made up the work by attending summer school, he is credited with a failure, and a progress resulting from the summer. He is considered as having spent but one semester in that half-grade in earning the semester of progress, and the summer is added to the total of summers. Because of this fact the number of "semesters spent" as given in the tables, is not always exactly equal to "semesters progressed" plus "semesters failed" minus "semesters skipped," which is the rule given in a later part of this chapter for making the summaries in the study.

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[2] Throughout this study ''B'' refers to the junior, or first half of a grade, and ''A'' to the senior, or second half.

7. Plan of Crediting Progress in Senior High School

The records in elementary schools and junior high schools usually gave the definite grade-classification of each pupil during the successive semesters he had been in school, and this classification was used as the basis for crediting a pupil's progress. But in senior high school the records did not give a grade-classification for each pupil which could be used to show school progress. Here progress was shown on the basis of semester credits, and was not directly comparable with progress in the schools below senior high. Therefore, an arbitrary scheme had to be used to translate units of credit in senior high school into units of progress.

The equivalent of four solid subjects a semester, giving a pupil four semester credits, was considered regular senior high school work. A pupil making strictly regular progress would thus earn four semester credits for each semester in school.

If a pupil fell two credits short of the number he should have secured by carrying regular work during the time he spent in school, he was considered as having failed the half-grade in which such shortage was found. If he gained more than two semester credits above the number he should have secured by carrying regular work during the time spent in school, he was credited with having skipped the half-grade in which such gain was found.

Accordingly, progress in 9B was credited if a pupil had more than two semester credits; progress in 9A if more than six credits; in 10B if more than ten credits, and in 10A if more than fourteen credits. It seems reasonable that a pupil who had lost a half-semester of work should be considered as having failed one semester; likewise if he had gained more than a half-semester of work he should be considered as having skipped a semester. Odell used a similar plan in determining indices of progress for the high schools of Illinois (33, p. 22).

A few illustrations of the method of using this scheme will probably be helpful. A pupil who entered senior high school in grade 9 and earned but two credits the first semester, was credited with a failure of promotion in grade 9B. He had earned but six credits by the end of his second semester, and therefore was credited with progress in 9B, besides his failure in 9B.

A second pupil made three credits his first semester and thus progressed 9B. He made three additional credits his second semester, a total now of six when he should have more than six, so he was credited with a failure of promotion in 9A. He made four additional credits the third semester and was credited with progress in 9A; his total credits are now only ten, which is just short of progress in 10A.

Likewise a pupil who had gained more than two credits was given credit for having skipped a half-grade. Assume that a pupil enters high school in 9B and earns four and one-half semester credits his first semester; he has progressed 9B. He earns five additional credits his second semester, progressing 9A. He earns five additional credits his third semester, progressing 10B. He now has a total of fourteen and one-half semester credits which gives him credit for progress in 10A, although he has spent but three semesters in school; therefore, he is also shown as having skipped 10A. In reality he is only a little more than half way through 10A, but it seems reasonable to allow the same credit for skips as for failures.

This plan does not provide for the pupil who carried only two or three subjects during the semester. A pupil with such a schedule during successive semesters is soon credited with a failure of promotion, although he may not have failed a single one of his subjects. However, pupils taking part-time work are usually the weaker ones who would probably fail if they tried more, and the plan rates them fairly. The pupil who carries but two subjects because of outside work, is probably not justly rated, but such pupils are not numerous. Furthermore, the proportional number of such pupils in the different high schools would probably be about equal.

There is little precedent to follow in a study which attempts to compare progress in senior high school with that of the elementary school or the junior high. Mr. Boyer has published a study for the schools of Philadelphia which compares the promotion rates of the ninth grade of senior high schools with the rates of the ninth grade of junior high schools (9, pp. 27-30). According to his method, promotion from 9B was credited in senior high schools only upon the completion of twenty credits of work, and promotion from 9A upon completion of forty credits of work. This required passing all the work in the solid subjects carried by the average pupil. But in junior high schools promotion from 9B was credited upon the completion of only twelve half-units of work, with conditions in as much as ten half-units; these conditions could be removed in the second half of the ninth grade, in addition to the regular work of 9A. If a pupil had less than forty units at the end of a semester spent in 9A he was transferred to senior high school and there placed in 9A.

This plan of accrediting progress is, in the opinion of the author, too severe for the senior high school pupils. Progress through the elementary grades and the junior high school is usually on an easier basis than this. Pupils are seldom retained in a grade if they fail only one subject, and in many schools the rule is to retain the pupil in his present classification only when he fails three or more subjects. This is about half of his work for any given grade, and is practically the equivalent of the amount of failed work allowed a senior high school pupil without loss of progress under the plan used in our study.

The plan of classification used by principals for administrative purposes is likewise too severe for purposes of computing progress. The following scheme of classification, which was in use in one of the schools included in this study, is typical of such administrative classification:

3½	credits	required	for	classification	in	9A
7	”	”	”	”	”	10B
10½	”	”	”	”	”	10A
14	”	”	”	”	”	11B

The plan used in this study permits more rapid progress during the early part of senior high school, but it practically coincides with the above at grade 11B.

A plan was considered for comparing progress in grade 9 of 8-4 schools with that in grade 9 of 6-3-3 schools, on the basis of subject failures and percentages of subject failures, but it was discarded. Don C. Rogers made a study in Chicago of promotion rates in the grades, and of subject failures in the high schools. He made certain comparisons between the grades and high schools on the basis of his findings, but he did not suggest a plan for translating his findings into terms of progress (37, pp. 250-255).

The central problem in this study is to determine the progress rates in grades 7, 8, 9, and 10 of the 6-3-3 and the 8-4 types of schools, as shown on the permanent record cards of the pupils, in an effort to determine the measurable amount of economy of time resulting from the junior high school organization. Subject failures in the two types of schools cannot be compared directly because they do not have the same value in terms of progress, but by the use of some arbitrary scheme it is possible to translate the credits (not failures) earned in high school during successive semesters into progress, since completion of high school depends upon the number of credits earned and not upon the number of failures which the pupil has made.

In the scheme which was used,

progress in 9B means more than 2 semester credits.
" " 9A " " " 6 " "
" " 10B " " " 10 " "
" " 10A " " " 14 " "

8. The Summaries and Tabulations

Some of the items were punched on tabulating cards and sorted by a Hollerith machine, but the necessity of analyzing them by small groups made it more economical and more accurate to summarize most of the items from the original copies. The sheets containing the original copies also had the advantage of giving at a glance the total picture of any pupil. There were eighty pupils' records on a filled sheet; summarizing the column for grade 8B might show that seventy of these had some record in this grade (the other ten pupils having quit before reaching 8B or not entering until later), as follows:

60 pupils progressed the half-grade in one semester
4 failed once but repeated and progressed
1 failed twice but repeated and progressed
1 skipped the grade
2 went to summer school while classified in this half-grade
1 was transferred

2 dropped
1 is marked with a question mark

The number of "semesters progressed" credited to these seventy pupils in grade 8B is found by counting all the code marks for progress and skips in the 8B column: 60+4+1+1 or 66. This is the sum of the sixty with regular progress, the four who repeated and progressed, the one who twice repeated and progressed, and the one who skipped.

The "semesters failed" are 4+2, or 6; four pupils failed once, and one pupil failed twice.

The "semesters skipped" are one. In some cases this number includes not only those who have spent no time in 8B because they received double promotions at the end of 7A, but also those who have earned enough credit in summer school to be placed in 8B without having been classified in 7A.

The "semesters spent" are 66+6—1, or 71; this is semesters progressed, plus semesters failed, minus semesters skipped.

Summers and drops were also totaled.

The summaries of individual sheets were combined to secure the complete record of a file; the summaries of files were weighted and combined to secure the complete record of a school; and the summaries of schools were combined to secure the complete record of a city.

9. PROGRESS RATE

The "progress rate" of any half-grade for a file, school, city, or group of cities was secured by dividing the "semesters progressed" in that half-grade by the "semesters spent" in school while securing that progress. For the sheet of records used in the illustration above, this is 66 divided by 71 or .929. It means that the seventy pupils averaged .929 of a semester of progress in grade 8B for each semester they spent in school in 8B.

10. THE METHOD OF SAMPLING

Every effort was made to have the records used in this study representative of all the records of each school for the period covered. The cards were filed in different lists in each city and school. Usually these were a live file, or those now in school; a dropped file, or those who have for any reason left that particular school or city; and a graduate file. Each list that was arranged in alphabetical order was sampled by copying every second, every fourth, or every fifth card. The tables appended give the city number, school number, list or file, sampling used, and actual number of pupils' records copied from that particular file.[3]

For several reasons the sampling, or fractional part of the cards used, was not the same for all files. The most satisfactory method would have been to copy all the cards in each file, but the great amount of labor forbade. In some lists the number of cards was so small that every card was copied, or every other card was thought necessary. In the larger lists every card was copied in order to secure empirical proof of the adequacy of the sampling used.

In still other lists the records desired were mixed with others in the file, and the work of separating those wanted and then taking a sampling of them was too great. Therefore, sections of the alphabet were sorted and every card in these sections was copied. Thus the dropped file of city number six contained the records of all pupils who had for any reason left the schools of this city in grades 1 to 12 inclusive. We were interested only in those cards with some record in grades 7, 8, 9, or 10, and as those cards were sorted out, each was copied (Table 11).

11. The Process of Weighting

The process of weighting consists of multiplying the results which were secured from tabulating and summarizing the records copied from any file by the reciprocal of the fraction representing the sampling used for that file. If every fourth card was copied, the summaries of the file were multiplied by four; if every fifth card was copied, the results were multiplied by five; if all cards were copied there was no multiplying. In order to secure the total number of failures, semesters spent, or other items for a given city, the totals from the various files, properly weighted, were added together. From these totals progress rates for the entire school or for a whole city were computed.

12. Necessity for Weighting

The progress rate of any one file could not be taken as the rate for an entire school, since the records found in the dropped file

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[3] Throughout this study the cities are designated by numbers 1 to 6 inclusive. The schools within each city are designated by numbers 1 and 2 for senior high schools, 3, 4, 5 and 6 for junior high schools, and 7 and 8 for elementary schools.

S.C.E.R.T., West Bengal
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are poorer than those in the live file or graduate file. The true progress rate of a school could not be found by merely lumping the results of all the files, unless the same proportion of the records had been secured from each file. Neither would the mean of the progress rates for the three separate files be correct, because each file represented a different number of records.

An example of weighting will illustrate the process used and also show the necessity for weighting. In order to secure a correct measure of the progress rate of all the pupils in grade 8A in city number six for the past five years, it was necessary to compute our results from the totals for which the samplings are representative. Nine hundred forty-two records were copied from the dropped file, or three-tenths of the total records in that file, which we assume constitute a fair sampling of them all (Table 11). These records show that 354 pupils progressed grade 8A by spending 399 semesters in school. Multiplying these results by 3 1/3 indicates that we would have found, if we had copied all the records in this file, that 1,180 pupils spent 1,330 semesters in progressing this half-grade. Adding these totals to the totals secured from a similar treatment of the live files and the graduate files of the junior and senior high schools gives us the weighted total progress and the weighted total semesters spent in grade 8A for all the schools of city number six during the past five years, which is the period covered by our records. These totals are 4,273 and 4,494 respectively, with a progress rate of .950 for all the pupils of grade 8A in this city during the past five years. (Table 11).

13. Adequacy of the Sampling

The question of the adequacy of any sampling is always troublesome and can seldom be satisfactorily answered. Ben U. Wood has given some proof of the adequacy of a sampling of every fourth card for items concerning the personal history of 6,468 employed boys in the city of Buffalo. In describing[4] his method and his results he says:

> Accordingly, the 6,468 cards (containing items concerning the personal history of certain boys in the city of Buffalo) were put into strict alphabetical order, and every fourth card was extracted. The extracted cards, thus comprising 25 per cent

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[4] Wood, Ben U., "The Reliability of Prediction of Proportion on the Basis of Random Sampling," *Journal of Educational Research* IV (December, 1921), p. 392.

> of the total and representing 1,617 cases, were sorted and tabulated with the Hollerith machines. . . . The remaining cards, comprising 75 per cent of the total (4,851 cases), were run through the machines for similar sorting and tabulation. Finally, all cards were thrown together and the total 6,468 cards were put through the machines. The results were placed in parallel columns. . . . The agreement illustrated ought to put an end to heresy. It is noteworthy that even in the items involving small numbers of cards, the proportions in the three groups are almost identical. . . .

The fact that Mr. Wood found almost equal proportions in the three groups for items involving small numbers of cards is especially significant.

In one three-year senior high school of 480 pupils and in one four-year senior high school of 616 pupils, every card in the live file was copied (Tables 4 and 24).* Since these records were copied in alphabetical order it was easy to check the adequacy of a sampling of one-half or one-fourth of these cards. Accordingly, every fourth record was taken from these lists and the results from a study of this sampling were compared with the findings from all the records. The progress rates obtained from each group of records are shown below. Of the sixteen pairs of rates, three show no differences; six have differences less than .009; and only one has a difference as large as .021.

A Comparison of the Progress Rates Obtained (1) by Using All the Records, and (2) by Using One-fourth of the Same Records

Grade	City 2, School 1 616 Pupils			City 6, School 1 480 Pupils		
	All	One-fourth	Difference	All	One-fourth	Difference
7B	.981	1.00	+.019	.996	.989	—.007
7A	1.035	1.017	—.018	1.00	1.00	0.
8B	.955	.955	0.	1.00	1.00	0.
8A	.971	.992	+.021	.994	.980	—.014
9B	.902	.909	+.007	.991	1.00	+.009
9A	.899	.887	—.012	.966	.983	+.017
10B	.902	.897	—.005	.889	.90	+.011
10A	.955	.951	—.004	.859	.865	+.006

The progress rates found by the use of the sampling are larger in seven cases and smaller in six than those found by taking all the records. In combining a number of samplings, as is done in this study in order to obtain the final progress rates, these differences probably tend to cancel each other with almost a negligible error remaining in the final rates.

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* Table 24 is not printed in this volume.

In those cases in which samplings are less than one-fourth there are increased possibilities of error; but in this study without exception these smaller samplings were employed with the larger groups of records, which fact tends to increase their reliability. In only one case was a sampling of one-fifth used for a group of less than 700 records, and that was for 610 records. The only sampling smaller than one-fifth was used for a group of about 1160 records, of which approximately one-eighth were copied.

The evidence presented relative to the adequacy of the sampling seems to justify the conclusion that for the purposes of this study the samplings used are adequate, and that any errors in the separate groups due to sampling probably tend to cancel out in the combined results.

CHAPTER II

THE DATA

The data were secured from the official records of the pupils' work which were filed in the offices of the Board of Education or the principal of the school. These official records were in the form of pupils' permanent record cards in four cities, bound volumes in two cities, and teachers' semester class sheets in one city. During a personal visit to each city the investigator copied the desired items from the records, using the method explained in Chapter I.

1. Number of Schools

The school systems in two of the six cities studied were organized on the 8-4 plan; three of them were on the 6-3-3 plan; and one system had recently changed from the 8-4 to the 6-3-3 plan, thus furnishing records of both types of organization. There were eleven junior high schools and four three-year senior high schools included in the study from the school systems of the 6-3-3 type as shown below:

Number of Schools Studied of the 6-3-3 Type

City Number	No. of Junior High Schools	No. of Senior High Schools
1	2	0
3	3	0
4	2	2
6	4	2
	—	—
	11	4

There were seventeen elementary schools and five four-year senior high schools included in the study from the 8-4 school systems as shown below:

Number of Schools Studied of the 8-4 Type

City Number	No. of Elementary Schools	No. of Senior High Schools
2	6	2
4	2	2
5	9	1
	17	5

2. Number of Records

There were 7,684 individual pupil records copied, which are assumed to be representative of the total number sampled, or 24,236 records. The number from each city is given below:

Individual Records

City Number	No. of Individual Records Copied	No. of Individual Records Sampled
2	1440	4949
3	1311	6500
4	1789	2080
5	415	1660
6	2729	9047
	7684	24236

Summaries of certain items were made from some of the records in cities number one and five. The number of such records summarized is shown below:

Number of Records Summarized

Grade	City 1	City 5	Total
7B	1030	1933	2963
7A	998	1882	2880
8B	940	1762	2702
8A	725	1688	2413
9B	728		728
9A	801		801
	5222	7265	12487

These summaries totaled 12,487 semesters which pupils had spent in school. The 7,684 individual pupil records comprised 34,138 semester records actually copied, which makes a total of 46,625 semester records either copied or summarized in this part of the study (Table 1).

The 7,684 individual records that were copied comprised 34,138 semester records, or an average of four and one-half semester records for each individual record. Therefore, the 24,236 individual records that were sampled would probably consist of about four and one-half times as many semester records, or 109,000, which is the probable number of semester records sampled.

When the 12,487 semester records that were summarized are included with those which were sampled, this gives a final total of nearly 120,000 semester records represented in this portion of the study. However, the records from city number three were not weighted in securing the final progress rates, which are therefore computed from a total of only 90,676 semester records (Table 6).

The totals of the columns in Table 1 give the number of actual semester records for each half-grade. The largest number is 7,854 for grade 7B and the smallest is 2,272 for grade 10A. The number from each city for each half-grade is given in the body of the table.

When the 6-3-3 records are separated and weighted so as to give the number which they represent, there are 7,788 of this type in 7B and 2,670 in 10A, as shown by Table 6 in the column totals for "Semesters Spent." When the 8-4 records are separated and properly weighted, there are 7,618 semester records of this type represented in 7B and 2,802 in 10A. A comparison of the number of records from the two types of schools shows that the totals are approximately equal in each half-grade except in 9B and 9A.

TABLE 1

DISTRIBUTION OF THE 46,625 SEMESTER RECORDS COPIED AND SUMMARIZED

City	Type of school	Grade 7B	7A	8B	8A	9B	9A	10B	10A
1	6-3-3	1030	998	940	725	728	801		
2	8-4	1206	1166	1231	1214	1215	1029	796	510
3	6-3-3	922	940	923	923	890	742		
4	6-3-3				72	427	418	415	284
	8-4	1137	1100	1023	924	629	501	440	372
5	8-4	1933	1882	1762	1688	463	389	287	212
6	6-3-3	1626	1531	1503	1453	1606	1502	1223	894
		7854	7617	7382	6999	5958	5382	3161	2272

3. The Data by Cities

a. CITY NUMBER ONE

The school system of city number one has been gradually reorganized and was placed completely upon the 6-3-3 plan about two years ago. It now has four junior high schools, with an enrollment of about 500 each. The city has a population of 50,000, with some foreigners and a few negroes. It has a few industrial plants and a small college.

In this city the records were not copied but were summarized from the teachers' class sheets, which constitute the official records of the junior high schools and are filed in the office of the principal. Copies of the records of individual pupils in grades 7 and 8 are transcribed to an eight-year card and filed in the office of the school board. Also the record in the ninth grade is transcribed to a four-year card and filed in the office of the principal of the senior high school. There was no means of copying the record of an individual pupil through grades 7, 8 and 9 except to search out his name on the six class sheets for the six semesters. Since this would have been extremely difficult, the records from this city were therefore summarized. The copy at the school board office would have given the record for grades 7 and 8, but frequently failed to show whether the work had been done in a junior high or an elementary school. A new card record system begun about a year ago will improve this situation.

In junior high school number three a failure of any three subjects was a failure of promotion. In school number four the plan of promotion attempted to place a child where he would secure the most good regardless of the subjects he had failed or passed. The ninth grade subjects resembled those in the traditional classical course of a four-year high school. Many pupils carried two subjects in 10B of the senior high while making up two in junior high.

b. CITY NUMBER TWO

City number two has a population of 40,000 with many retired farmers, railroad employees, and office workers in a near-by city. It still continues an 8-4 school system, with some elementary schools lacking the full eight years. The present enrollment in grade 7 is 686; in grade 8, 579; in grades 9-12 inclusive, 1,626. There are two senior high schools, one only four years old.

Individual record cards are on file in the office of the superintendent for all pupils of the elementary schools since 1917. These are in two alphabetical files: (1) Graduates of the eighth grade (containing about 4,200 cards); (2) A dropped file—those who have left the system for any reason (containing about 12,000 cards). Records in this system are very complete, giving intelligence quotients, character ratings, reasons for leaving school, and occupations of parents.

Individual record cards for all pupils in the senior high schools were found in the office of the principal of each building, in three alphabetical files: (1) Live file—those now in school; (2) Graduates; (3) Dropped file—those who have left the school for any reason. In the senior high schools only records for the years 1922-27 were included in the study.

A pupil's card from the high school files was matched with his card in the elementary file and his record for grades 7, 8, 9, and 10, or the portion thereof given, was copied. There were 1,255 cards matched in this manner. Tables 4 and 10 show the data for city number two.

C. CITY NUMBER THREE

City number three has a population of 52,000, consisting of skilled workmen, business men, and retired persons of German parentage. There are several parochial schools of high school and college grade.

The schools have been organized as a 6-3-3 system for the past eight years. There are three junior high schools and one senior high school. Individual records of pupils in both junior and senior high schools are in bound volumes, kept in the offices of the principals. Names are entered in these volumes in order of date of entrance into the building. There are several records on a page, and pages were picked at random from the volumes and all the records copied from these pages. About one page in five was copied, and two of the principals believed this would give a true random sampling of all the records.

When a record in 9A was found marked "incomplete," and the attendance record showed that the pupil had been in school at least seventy days of the semester, a failure was credited to him. This, as explained previously, had the effect of increasing the number of failures in 9A, but there appeared to be no other way to show that such pupils had failed a part of their work, although this may have occurred earlier than 9A.

An attempt was made to match the junior high school records for individual pupils with their records in grade 10 from the senior high school. Only twenty were completed in almost two hours of work, and the plan was given up, with the result that there are no records from the senior high school of this city.

Table 8 gives the data from city number three.

d. CITY NUMBER FOUR

City number four has a population of 140,000 with a number of Jews and negroes. Its school system has been in process of change from an 8-4 to a 6-3-3 type during the past several years and this change was completed only two years ago. Therefore, no records were available showing progress entirely through junior high school and grade 10. However, some records were secured from two junior high schools covering the few years since their establishment. When possible these were matched with the records of the same pupils for grade 10, and whatever record appeared in grades 8, 9, and 10 was copied.

All records covering years 1917-25 from two elementary schools that could be matched with the records of the same pupils in grades 9 and 10 of senior high school were copied. Samplings were also taken of the records from these two schools which did not match with the records of senior high schools.

The cards for the ten years studied were of several forms: one for elementary schools, one for junior high schools, and three for different periods of years in the senior high schools. Because of the recent reorganization, the records did not lend themselves readily to this study.

e. CITY NUMBER FIVE

City number five has several industrial plants which have brought a number of laborers into its population of 215,000. There are also many Jews and a number of negroes. The city is organized completely on the 8-4 plan with the exception of one small six-year high school.

Records for the elementary schools were in bound volumes in the office of the Board of Education, and were grouped according to the class sections of teachers. The promotion of each pupil at the end of the semester was marked "yes" or "no." The number of transfers, drops, lefts, failures, conditions, promotions and special promotions was recorded for each class section. Nine elementary schools were studied using the records for seven of the semesters between the years 1921 and 1927. These nine schools were named by two of the assistant superintendents of the school system as typical of the schools of the city: three being of the higher social class—the professional and business; three of the average class—merchants and skilled mechanics; and three of the mixed element—foreigners, negroes, and day laborers.

In one senior high school the live file, comprising those pupils who were in school at the time of the investigation, was studied by taking a sampling of every fifth card. It was a slow and difficult task to determine from those cards the amount of credit earned each semester. Several hours were spent in studying the records of a second high school before the task was finally given up because of the great number of vocational courses with fractional credits that varied in amount for different years, and for which the exact amount of credit was often not stated on the record.

Table 7 contains the data from city number five.

f. CITY NUMBER SIX

This city has a population of 76,000. There are a few industrial plants employing laborers and skilled mechanics, several railroad shops and a small college.

The schools have been organized as a 6-3-3 system for the last five years. There are four junior high schools with a present enrollment of 3200 and two senior high schools with an enrollment of about 1800.

Accumulative individual record cards, beginning with kindergarten and including grade 12, are on file in the office of the superintendent for all pupils who have been in the school system during the last five years. These were in alphabetical files in the following groups: (1) a live file for each junior high school; (2) a live file for each senior high school; (3) graduates of each senior high school, grouped according to the semester of graduation; (4) a dropped file including all pupils who had during the last five years, for any reason, left the public schools of the city before graduating from grade 12.

Every fifth card was copied from the junior high school files. All the cards in the live file of senior high school number one were copied, and every fourth card from the live file of senior high school number two. Records for the graduates of the senior high schools were filed in groups according to date of graduation, and the samplings from these groups were one-fourth, one-half, and in some cases all the cards. The dropped file contained about 10,000 cards. Since only those with some record in a portion of grades 7, 8, 9, and 10 were wanted, these were sorted out and all of them copied. Those sections of the file were covered which include the following letters: A-B, E-F, I-J, M-Maz, N-O, Ro-Sch, W-Wi. This was a sampling of about three-tenths of the total file.

The records in city number six were found to be the best of all the cities investigated for the purposes of this study. If conditions in all the cities had been as satisfactory as they were here, the study might have covered a much larger number of records.

Table 11 presents the data from this city.

4. The Bureau of Educational Research Data

Chapter III of this study is based upon materials which belong to the Bureau of Educational Research of the University of Iowa.[1] These materials are treated separately and, in any reference to them, are called the "Bureau of Educational Research Data." At this point it is sufficient merely to call attention to Table 3 containing a summary of the records used in that portion of the study, which total 38,444 semester records, in addition to the 90,676 in the main portion of the study.

Tables 2 and 3 contain the data from the Bureau of Educational Research.

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[1] These materials were made available to the investigator through the courtesy of Dr. Harry A. Greene, Director of the Bureau.

CHAPTER III

THE BUREAU OF EDUCATIONAL RESEARCH DATA

1. SOURCE OF DATA

The Bureau of Educational Research of the University of Iowa secured the progress records of 53,844 pupils who were attending the public schools of 112 cities of Iowa during the early part of the year 1926. These records were copied by the teachers in each of the cities on progress record blanks sent from the bureau with detailed instructions as to their use. Mr. Gustaf Freden, a graduate student at the University of Iowa, checked these records for omissions and errors. For various reasons only 38,144 of the records from 100 of the cities were complete and correct and could be used (21, p. 10). The information obtained from these records had been punched on Hollerith cards, which together with the original progress record blanks, age-grade tables, progress tables, and other materials, were available for further study and analysis.

TABLE 2

TOTAL RECORDS STUDIED FROM THE BUREAU OF EDUCATIONAL RESEARCH DATA

Annual Promotion Plan

Grade	8-4 schools in 42 cities	6-3-3 schools in 11 cities	6-2-4 schools in 22 cities	Total 75 cities
6	1990	1085	1309	4384
7	2146	1205	1383	4734
8	1045	820	624	2489
9		393		393
	5181	3503	3316	12,000

Semi-annual Promotion Plan

Grade	8-4 schools in 5 cities	6-3-3 schools in 3 cities	6-2-4 schools in 3 cities	Total 11 cities
6B	1348	1819	225	3392
6A	1282	1850	204	3336
7B	1034	1355	162	2551
7A	846	1134	134	2114
8B	469	845	80	1394
8A	304	644	54	1002
9B		416		416
9A		239		239
	5283	8302	859	14,444

Total Semester Records

	8-4 schools in 47 cities	6-3-3 schools in 14 cities	6-2-4 schools in 25 cities	Total 86 cities
Annual	10,362	7,006	6,632	24,000
Semi-annual	5,283	8,302	859	14,444
Both	15,645	15,308	7,491	38,444

Table 2 shows that the records used in this portion of the study came from eighty-six Iowa cities. The schools in seventy-five of them had annual promotions, and eleven had semi-annual promotions. In forty-seven cities the schools were of the 8-4 type of organization, in fourteen of the 6-3-3 type, and in twenty-five of the 6-2-4 type; 14,444 semester records from semi-annual promotion schools and 12,000 year records from annual promotion schools were used in the study, or a total of 38,444 semester records.

2. Method of Treatment

All the Hollerith cards with entries in grades 6, 7, 8, and 9 were selected for study, in an attempt to determine whether the type of school organization had any measurable effect upon the amount of time required for the average pupil to progress in each of these grades. Progress rates in each grade for each type of organization were used as measures of the amount of time required for the average pupil.

The cards thus selected numbered about 11,000. There were only 800 cards for grade 9, and all of these were from junior high schools. There were no cards for the grades above 9.

Two codes had been used in punching the cards, one for schools with annual promotions and the other for schools with semi-annual promotions. The cards were first sorted according to the present grade of the pupils, *i.e.,* 8, 7, and 6 for annual promotions, and 9A, 9B, 8A, 8B, 7A, 7B, 6A, and 6B for semi-annual promotions. They were next sorted into groups according to cities, and each city was studied separately. The results for all cities of each of the three principal types of organization were then combined to secure the totals for 8-4, 6-3-3, and 6-2-4 type schools. Records from cities with such uncommon organizations as 5-3-4, 4-3-5, etc. were not used.

The cards of the ninth grade pupils were sorted to determine which ones first entered the school at grade 6 or below, and which entered at grade 7, grade 8, or grade 9. Failures and skips of these pupils in each grade from 6 to 9 inclusive were tabulated. The cards of the sixth, seventh, and eighth grades were treated in a similar manner and tabulations made of the results. The same procedure was used for cards from schools with semi-annual promotions, except that the tabulations were made for half-grades instead of grades.

Each pupil whose present grade was 8 and who had entered the schools of the city in grade 6 or below was credited with having progressed grades 6, 7, and 8. Each pupil whose present grade was 7 and who had entered the schools in grade 6 or below was credited with having progressed grades 6 and 7. A pupil whose present grade was 8 and who had entered in grade 7 was credited with progress in grades 7 and 8. The total number of pupils who had progressed each grade in each city was thus obtained. The number of years spent in securing this progress was found by taking the number of pupils who had earned progress in a particular grade, plus the number of failures, minus the number of skips.

The records from city number fifty-nine (below) will serve as an illustration. In this city there were seventy pupils in grade 8 at the time these progress blanks were filled out; fifty-seven of these entered the schools of the city in grade 6 or below, and each is credited with progress in grades 6, 7, and 8; eleven of the seventy entered in grade 7, and each of these is credited with progress in grades 7 and 8; two of the seventy entered grade 8, and each of these is credited with progress only in grade 8. The number of pupils who progressed each grade is therefore: fifty-seven in grade 6; fifty-seven plus eleven, or sixty-eight, in grade 7; and fifty-seven plus eleven plus two, or seventy, in grade 8.

Of the fifty-seven who entered grade 6 or below, one failed in grade 6, and eight failed in grade 7. Of the eleven who entered grade 7, three failed in that grade. Of the seventy now in grade 8, one failed last year and is now repeating the grade. The following scheme shows the number of years of progress, failures, and skips for each grade:

Number of Pupils	Grade Entered	Years								
		Progressed in Grade			Failed in Grade			Skipped in Grade		
		6	7	8	6	7	8	6	7	8
57	6 or below	57	57	57	1	8		0	0	0
11	7		11	11		3				
2	8			2			1			
		57	68	70	1	11	1	0	0	0

The number of years spent in any grade is found, as stated, by adding the number of pupils who progressed and the number who failed and subtracting the number who skipped. In grade 6 this is fifty-seven plus one or fifty-eight; in grade 7, sixty-eight plus eleven or seventy-nine; and in grade 8, seventy plus one or seventy-one. None of these eighth grade pupils had skipped in grades 6 or 7.

The progress rate is found by dividing the years of progress by the years spent in securing that progress. For grade 6 this is fifty-seven divided by fifty-eight or .983, for grade 7 it is sixty-eight divided by seventy-nine or .860; for grade 8 it is seventy divided by seventy-one or .985. The following scheme illustrates the method:

	Grade		
	6	7	8
Years progressed	57	68	70
Years failed	1	11	1
Years spent	58	79	71
Progress rate	.983	.860	.985

The cards for each city of the 8-4, 6-3-3, and 6-2-4 types of organizations were sorted and analyzed and tabulations made similar to the above. These facts were then consolidated according to the type of organization and the plan of promotion, whether annual or semi-annual (Table 3).

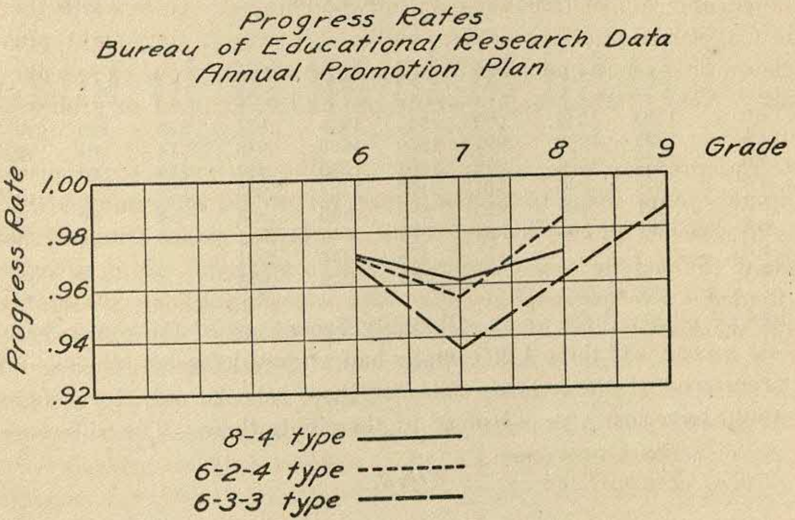
3. Progress Rates Found

The progress rates for all the schools having annual promotions are given below. These rates were obtained from the combined records of all the cities with the same type of organization. Figure 1 gives the same material in graphic form.

Progress Rates for Annual Promotion Plan

Grade	For 42 8-4 cities	For 11 6-3-3 cities	For 22 6-2-4 cities
6	.971	.968	.970
7	.961	.935	.955
8	.972	.961	.982
9		.987	

Fig.1.



Progress Rates
Bureau of Educational Research Data
Annual Promotion Plan

Progress rates for the 8-4 schools are higher in all grades than the 6-3-3 rates. The difference is only .003 in grade 6, but increases to .016 in grade 7 and .011 in grade 8. The rate for the 6-2-4 schools is .001 lower than the 8-4 in grade 6, .006 lower in grade 7, and .01 higher in grade 8. For these groups of schools the 6-3-3 type of organization is least economical of the pupils' time while the 8-4 and 6-2-4 types are about equally economical.

Just how much economy of time is represented by these rates? Table 3 indicates that 2,146 pupils progressed grade 7 in the 8-4 schools having annual promotions with a loss of eighty-seven years due to failures. Roughly 4 per cent of the pupils have lost a year. But in the 6-3-3 schools 1,205 pupils progressed grade 7 with a

TABLE 3

TOTALS OF BUREAU OF EDUCATIONAL RESEARCH DATA

Annual Promotion Plan

	8-4 schools in 42 cities			6-3-3 schools in 11 cities			6-2-4 schools in 22 cities		
Grade	Years spent	Years progressed	Progress rate	Years spent	Years progressed	Progress rate	Years spent	Years progressed	Progress rate
6	2049	1990	.971	1120	1085	.966	1349	1309	.970
7	2233	2146	.961	1288	1205	.935	1448	1383	.955
8	1075	1045	.972	853	820	.961	635	624	.982
9				398	393	.987			

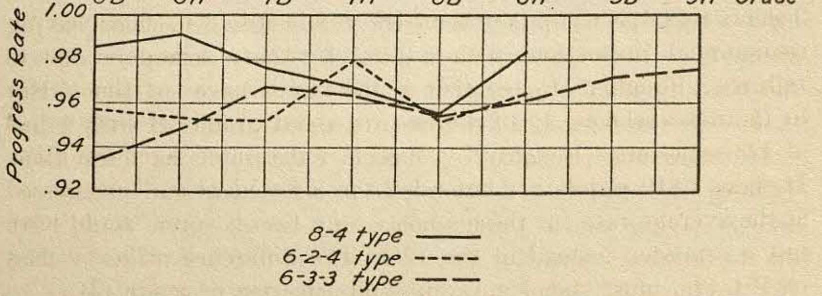
Semi-annual Promotion Plan

	8-4 schools in 5 cities			6-3-3 schools in 3 cities			6-2-4 schools in 3 cities		
Grade	Semesters spent	Semesters progressed	Progress rate	Semesters spent	Semesters progressed	Progress rate	Semesters spent	Semesters progressed	Progress rate
6B	1368	1348	.985	1947	1819	.934	235	225	.957
6A	1293	1282	.991	1950	1850	.948	214	204	.953
7B	1059	1034	.976	1401	1355	.967	170	162	.952
7A	874	846	.967	1177	1134	.963	137	134	.978
8B	491	469	.955	886	845	.953	84	80	.952
8A	309	304	.983	670	644	.961	56	54	.964
9B				428	416	.971			
9A				245	239	.975			

loss of eighty-three years. Roughly 7 per cent of the pupils have lost a year. If these 1,205 pupils had attended the 8-4 schools and progressed at the average rate for those schools, only forty-eight would have lost a year instead of the eighty-three. The difference

Fig. 2.

Progress Rates
Bureau of Educational Research Data
Semi-Annual Promotion Plan



would make a class of thirty-five who spent an additional year in grade 7 of the 6-3-3 schools.

The progress rates for all the schools having semi-annual promotions are given below. These rates were obtained in the same manner as those for the annual promotion schools. Figure 2 shows the same facts in graphic form.

Progress Rates for Semi-Annual Promotion Plan

Grade	For five 8-4 cities	For three 6-3-3 cities	For three 6-2-4 cities
6B	.985	.934	.957
6A	.991	.948	.953
7B	.976	.967	.952
7A	.967	.963	.978
8B	.955	.953	.952
8A	.983	.961	.964
9B		.971	
9A		.975	

Again the rates for the 8-4 schools are higher than those for the 6-3-3 schools. The differences are very small in grades 7B, 7A, and 8B, being .009, .004 and .002 respectively. They increase to .022 in 8A, .051 in 6B, and .043 in 6A. The rates for the 6-2-4 schools fluctuate considerably, being lowest of the three types in 7B and 8B, highest of the three in 7A, and occupying a middle place in 6B, 6A and 8A. Again in this group of schools, the 6-3-3 type is least economical of the pupils' time, with the 6-2-4 type only slightly more economical. The 8-4 type shows considerable economy over both the other types in grade 8A, and still greater economy in 6B and 6A.

4. Amount of Economy

Just how much economy of time do these rates represent? Table 3 shows that 1,348 pupils progressed grade 6B in 8-4 schools having semi-annual promotions with a loss of twenty semesters due to failures. Roughly 1½ per cent of the pupils have lost time. But in the 6-3-3 schools, 1,819 pupils progressed grade 6B with a loss of 128 semesters. Roughly 7 per cent of the pupils have lost time. If these 1,819 pupils had attended the 8-4 schools and progressed at the average rate for those schools, only twenty-seven would have lost a semester instead of the 128. The difference makes a class of 101 who must spend an additional semester in grade 6B.

Likewise 304 pupils progressed grade 8A in 8-4 schools with a loss of only five semesters due to failures. Less than 2 per cent of the pupils have lost time. In 6-3-3 schools 644 pupils lost twenty-six semesters, or about 4 per cent lost time. If these pupils had attended the 8-4 schools only eleven would have lost a semester, or a difference of fifteen.

While there is comparatively little difference in the progress rates of the three types of schools covered in this portion of the study, yet, according to these findings, the 6-3-3 schools are less economical of the pupils' time in grades 6, 7, and 8, than the 8-4 schools. The 6-2-4 type is a little more economical than the 6-3-3 in semi-annual promotion schools, and considerably more economical in the annual promotion schools.

5. Relation Between Progress Rate and Size of Cities

There may be some connection between the size of the cities and the progress rates found in this study. The 6-3-3 cities are the larger ones in both promotion plans, yet they have the lower progress rates.

However, this does not necessarily mean that these large cities fail more of their pupils than do the small cities, although this may be true. It probably means that the large cities sent in a greater proportion of their poor records than did the small cities, which might easily happen because of better systems of record-keeping in the large cities, with less chance to lose the records of irregular pupils. Also the schools with the most complete records will be penalized in a study of this kind, by having more of their failures of promotion on record and available for transfer to the progress blanks, although they may actually fail fewer pupils than other cities whose poor records do not show all their failures.

6. Skips

Is this high progress rate for 8-4 schools caused by fewer failures or by more skips in these schools than in the 6-3-3 schools? Which grades show the greatest frequency of skips and failures? An analysis of the failures and skips of the total data will help to answer these questions.

The skips are summarized below:

Years Skipped—Annual Promotion Plan

Grade	In 8-4 schools	In 6-3-3 schools	In 6-2-4 schools	Total
6	3	1	2	6
7	1	..	..	1
	4	1	2	7

In the annual promotion plan there are very few skips, totaling but six for grade 6, only .13 of one per cent, and one for grade 7. There are none in grade 8. The number of skips therefore has a negligible effect on the progress rates in this group of schools.

Semesters Skipped—Semi-Annual Promotion Plan

Grade	In 8-4 schools		In 6-3-3 schools		In 6-2-4 schools		Total
	No.	Per cent	No.	Per cent	No.	Per cent	
6B	19	1.40	10	.54	1	.44	30
6A	6	1.24	3	.16			19
7B	3	.30					3
7A	2	.25					2
	40	.79	13	.16	1	.12	54

In the schools with the semi-annual promotion plan there is a total of fifty-four skips. Thirty of these are in 6B, nineteen in 6A, three in 7B, and two in 7A. In the 8-4 schools 1.4 per cent of the pupils skip 6B, compared with .54 of one per cent in 6-3-3 schools. In 6A, 1.24 per cent of the 8-4 pupils skip, compared with .16 of one per cent of the 6-3-3 pupils. The three skips in 7B and the two in 7A are all in 8-4 schools. Under the semi-annual promotion plan, the progress rates in 8-4 schools in grades 6B and 6A are appreciably increased by pupils who skip these grades; but the rates in the other grades of the 8-4 schools, and in all grades of the 6-3-3 schools, are but little affected by skips.

In the total group of data there are no skips in grades 8 and 9, and very few in grade 7, but there are enough in grade 6 to effect an increase in progress rates.

7. FAILURES

In the annual promotion schools there is but little difference in the percentages of failures in the three types of schools in grade

6. But in grades 7 and 8, the 6-3-3 schools fail 2.78 per cent and 1.15 per cent more pupils respectively than the 8-4 schools. The difference in progress rates is thus directly due to the greater per cent of failures in the 6-3-3 schools.

Years Failed—Annual Promotion Plan

Grade	In 8-4 schools		In 6-3-3 schools		In 6-2-4 schools		Total	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
6	62	3.11	36	3.31	42	3.20	140	3.19
7	88	4.10	83	6.88	65	4.69	236	4.98
8	30	2.87	33	4.02	11	1.76	74	2.97
9			5	1.27			5	1.27
	180	3.47	157	4.48	118	3.56	455	3.79

In the semi-annual promotion schools, the 6-3-3 type fail a larger percentage of their pupils in every half-grade than do the 8-4 type. The difference is almost 5 per cent in 6B, 3.46 per cent in 6A and 2.39 per cent in 8A. The difference in progress rates in this group of schools is due chiefly to the larger number of failures in 6-3-3 schools, but in part also to the greater frequency of skips in 8-4 schools.

Semesters Failed—Semi-Annual Promotion Plan

Grade	In 8-4 schools		In 6-3-3 schools		In 6-2-4 schools		Total	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
6B	39	2.89	139	7.58	11	4.88	189	5.58
6A	27	2.10	103	5.56	10	4.90	140	4.19
7B	28	2.70	46	3.44	8	4.93	82	3.20
7A	30	3.54	43	3.79	3	2.23	76	3.59
8B	22	4.69	41	4.85	4	5.00	67	4.81
8A	5	1.64	26	4.03	2	3.70	33	3.28
9B			12	2.			12	2.89
			6	2.			6	2.51
	151	2.86	416	5.00	38	4.42	605	4.18

We must conclude then, that the progress rates for 6-3-3 schools are lower than those for 8-4 schools because the former fail more pupils than the latter, and to a slight degree, because the latter allow more pupils to skip a grade or a half-grade than do the 6-3-3 schools.

It is interesting to note that there is very little difference in the percentages of failure in schools having the annual promotion plan and those having the semi-annual promotion plan, but that there is considerably more skipping in the latter schools. This is probably an indication of the greater flexibility of the semi-annual promotion plan, since it is of less consequence for a pupil to skip a half year of work than to jump a full year. One might also expect, by the use of the same reasoning, to find a greater frequency of failure in the semi-annual schools, but this does not hold true to any extent.

8. Comparison with Other Findings

The lowest progress rate under the annual promotion plan is found in grade 7 of the 6-3-3 type (page 37). This is .935. The lowest rate under the semi-annual plan is found in grade 6B of the 6-3-3 type (page 39). This is .934. Both these rates are higher than the average rate of .933 for the elementary schools of Iowa which Mr. Freden found in his study in which he included these same pupils' records (21, p. 25). Our progress rates are also higher than those found by Odell for the public elementary schools of Illinois (33, p. 7).

The promotion percentages of Philadelphia for the semester ending January, 1926, were 87.0 in 7B, 89.4 in 7A, 90.4 in 8B, and 93.6 in 8A (9, p. 10). Promotion percentages are not strictly comparable with progress rates, but the Philadelphia percentages also indicate that these progress rates for Iowa are high.

9. Inadequacies of the Data

A critical examination of the Bureau of Educational Research data suggests that they are inadequate for a study of progress in grades 6, 7, 8, and 9. The actual number of pupil records in grade 9 is small. When the records for grade 8 are separated into types of organization, the number in each group is not large.

However, there are probably enough records included, if they were representative of all the records in these grades for the schools of Iowa. This is doubtful. A record was presumably sent in for every pupil who was in school at the time the progress blanks were filled out. Any that were omitted were probably the incomplete records of irregular pupils. Also, the non-checking and incorrect records that were sent in were not used. There were 10,296 of these (21, p. 9). They probably contained more than a proportionate share of failures, semesters out of school, and other irregularities which tend to make a record incorrect and non-checking. A long record is more likely to contain some irregularity or omission than a short one, hence there were probably more non-checking records among those from the upper grades than among those of the lower grades, which left the more perfect records in the upper grades. For these reasons the records used in this portion of the study will probably produce a higher progress rate than would be obtained from absolutely all the records of these same schools.

A summary was given (page 35) of the records of the seventy pupils in grade 8 in city number fifty-nine. Only fifty-seven of these seventy pupils had taken their sixth grade work in that city. But at the time these fifty-seven pupils were in grade 6, the enrollment in the grade was very probably larger than fifty-seven. It was probably even larger than the present enrollment of seventy in grade 8, unless city number fifty-nine has many pupils from outside the school district who entered the system in grades 7 and 8, but this is not likely to be the case with the majority of the cities. A conservative estimate of the enrollment of this class in the sixth grade would be seventy-five.

This study, then, includes but fifty-seven records in grade 6 out of a class of seventy-five. Are these fifty-seven records representative of the seventy-five? Probably not. The pupils who drop out of school in grades 6, 7, and 8 are usually the unsuccessful and the over-age. This is shown by comparing the records from the dropped file with those from the graduate or live files of any school. Table 4 (page 48) shows the records from the three files of a senior high school. The progress rate in grade 7B is .940 for the dropped pupils, .981 for those now in senior high school, and .987 for those who have graduated. Comparisons of the rates for the two files given in Table 11 (page 74) show similar differences. It would appear, then, that the fifty-seven records from grade 6 of city number fifty-nine are those of the more successful pupils in a class of more than fifty-seven.

The records from grades 7 and 6 contain a similar error, although to a less degree than those from grade 8. It is the author's conclusion, therefore, that the records of the Bureau of Educational Research do not constitute a true sampling of all the records for grades 6, 7, 8, and 9 of the schools studied, and that they probably show progress rates somewhat higher than the total records of these schools would show.

10. Sources of Error

Another error results from the method here employed to compute progress. In city fifty-nine there were seventy pupils in grade 8 at the time the progress blanks were filled out, which was in April, 1926. Each of these pupils was credited with progress in grade 8, although the school year was scarcely more than three-fourths over and some will probably not pass, while others will perhaps quit school before June. The only record of failure in this grade is for the one pupil who failed the grade last year and is repeating this year. This would provide a measure of the progress rate in grade 8, providing that the enrollments for the two years are equal, and providing all who failed last year are repeating this year,—none having moved away, quit school, or died. But if two others failed in the eighth grade last year who are not repeating this year, then the failure rate of one in seventy for grade 8 is too low, and the resulting progress rate of .985 is too high.

A similar error is found in each grade and half grade included in this study, with resulting progress rates which are probably all too high. However, the plan of obtaining progress rates by including such records seemed better than to lessen the number of records by throwing them out. Also there is no certainty of the existence of such an error, nor any feasible means of determining its probable amount so as to correct for it.

11. Conclusions and Findings

1. In the schools having annual promotions, and in grades 6, 7, and 8, the progress rates for the 8-4 type are higher than the rates for the 6-3-3 type.
2. In the schools having semi-annual promotions, and in grades 7B, 7A, and 8B, the progress rates for the 8-4 type differ but little from those of the 6-3-3 type; but in grade 8A the rate for the 8-4 type is the higher.
3. The difference in the progress rates of the two types of schools represents a small amount of economy of time for the 8-4 type over the 6-3-3 type.
4. The progress rates of the 6-2-4 type are, in general, neither

as high as those of the 8-4 type, nor as low as those of the 6-3-3 type.

5. The larger cities usually show the lower progress rates, probably because they sent in a larger proportion of their poor records than did the smaller cities. This helps to account for the lower rates of the 6-3-3 type schools, since most of the large cities are organized on the 6-3-3 plan.

6. The number of skips is not large enough to affect an appreciable increase in the progress rates in any grade of junior high school in any of the three types of schools of either promotion plan.

7. In the annual promotion plan the 6-3-3 schools failed a larger percentage of their pupils in grades 7 and 8 than did the 8-4 schools; this is the cause of the lower progress rate in 6-3-3 schools.

8. In the semi-annual promotion plan the 6-3-3 schools failed a larger percentage of their pupils in every half-grade than did the 8-4 schools; this is the cause of the lower progress rate in 6-3-3 schools.

9. The progress rates obtained from these data are higher than those obtained by Freden for Iowa and Odell for Illinois.

10. These data are not adequate for a study of progress in grades 6, 7, 8, and 9 since the records are probably not representative of all the records of the schools included, but constitute a selection of the better records of these schools.

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CHAPTER IV

ECONOMY OF TIME

One of the two major problems of this study is to measure any economy of time resulting from the junior high school type of organization over that of the older 8-4 type of organization. Do the pupils finish grades 7, 8, and 9 in less time in the 6-3-3 schools than in the 8-4 schools? And if so, just how much less is their average time?

1. Progress Rates Used as the Measure

To answer these questions the progress rates in grades 7, 8, and 9 are obtained for both types of schools. Progress rate is determined, as previously explained, by dividing the total number of pupils who progressed a half-grade by the total number of semesters of time spent by pupils in securing that progress. The method of computing it was illustrated in Chapter I, page 12. Pupils who dropped out or were transferred before the end of the semester and received neither a failure nor a promotion on their records were not included in the computations. Pupils who entered from other schools during the semester and received a promotion or a failure were included. Pupils who were absent a great deal during the semester were included if their records showed that they received either a failure or a promotion.

Pupils who progressed the half-grade by skipping it, or by attending a summer session only, were included in the totals of progress, but were not included in the totals of time spent in that particular half-grade. For a few small groups this results in a progress rate of more than 1.00. For example, half-grade 7A in the live file of Table 4, has a progress rate of 1.035. Table 4 does not give all the facts that entered into the computation of this particular progress rate in 7A, but the following description of the process will supply them.

A total of 469 pupils are credited with progress in this half-grade; twenty-six skipped the half-grade; twenty-seven of these did not enter it at all having received double promotions in 7B, and one made enough credits in summer school to skip it; and two of the three who attended summer school made up work failed, and progressed. This is a total of thirty who secured progress by other than the regular way of spending a semester in the half-grade. The rest of the 469, or 439, progressed by spending a semester in this half-grade; while fourteen pupils spent a semester and failed the half-grade. Since 439 semesters were spent by the pupils who progressed, and fourteen semesters were spent by those who failed, there were then 453 semesters spent in this half-grade by all the pupils in this school (so far as our data show).

TABLE 4

CITY 2, SENIOR HIGH SCHOOL 1

Grade	Semesters spent	Semesters progressed	Semesters failed	Semesters skipped	Summer school	Pupils dropped	Progress rate
			Live file, less grade 12				
			All cards—616 pupils				
7B	474	465	11	2	1		.981
7A	453	469	14	28	3		1.035
8B	515	492	25	2			.955
8A	523	508	15		3		.971
9B	514	464	51		3	25	.902
9A	397	357	40		2	16	.899
10B	263	237	26			18	.902
10A	152	145	7		1	7	.955
			Dropped file				
			1 of 4 cards—142 pupils				
7B	118	111	7				.940
7A	126	117	11	2			.924
8B	129	126	4	1			.977
8A	136	134	2				.985
9B	139	111	28		2	16	.798
9A	96	76	20			12	.792
10B	67	55	13	1		3	.821
10A	44	35	9		1	5	.795
			Graduate file				
			1 of 4 cards—80 pupils				
7B	76	75	1				.987
7A	64	75	1	12			1.172
8B	79	78	2				.987
8A	79	80		1	3		1.013
9B	81	79	2				.975
9A	81	78	3				.963
10B	84	78	6				.928
10A	80	78	2				.975

The semesters progressed divided by the semesters spent are 469 divided by 453, or 1.035, which is the progress rate. This means that on the average, pupils in this school and city were credited with 1.035 semesters of progress for each semester they spent in 7A. If every pupil who attended school a semester made one semester of progress, the rate would be 1.00; if some pupils fail of promotion, the rate tends to be less than 1.00; if some pupils skip the half-grade, the rate tends to be greater than 1.00.

2. Factors Affecting This Measure

Although progress rates of the 6-3-3 schools may be found to differ from those in the 8-4 schools, it is not certain that this difference is due to the type of organization. Progress rates may be increased by a mandate from the superintendent or principal requiring each teacher to promote practically all of her pupils. Such a requirement may exist in spirit although not in fact.

Progress rates are also affected by the number of retarded or atypical pupils cared for in special classes instead of in the regular classes. All the cities studied have provided special work for such pupils, but in none of them was the number of pupils in special classes large enough to have an appreciable effect on the rate for the school system as a whole.

The age of pupils is probably a factor in their success in any half-grade. In large groups of pupils the older ones should succeed the better, if the work required of them is comparable. This does not mean that the over-age pupil is more successful than the normal or the under-age pupil. Usually he is not. However, maturity does mean added ability, or our conceptions of age norms for standardized tests, normal age for grade, and intelligence quotients are all meaningless.

Progress rates may also be reflections of the health of the pupils; of the social class from which they come; of the attitude of the home or the community toward the school; of the age at entrance; of the parentage, foreign, negro, etc.; of the training of the teachers; or of the suitableness of the curriculum.

This investigation makes no attempt to evaluate the effect of these items upon the progress rate of each city or school. For the purposes of the investigation these factors are assumed to have equal total effects in each of the cities studied. Although their existence is recognized, they probably do not have an important influence upon the results obtained when the records of large groups of pupils over successive years are included. Furthermore, there is reason to believe that the teacher factor and those of health, attitude toward school, social class, and parentage, would be cancelled out in groups as large as those studied and in the particular groups chosen. However, no evidence is presented to prove this statement: the word of local persons was accepted that they were not special groups.

3. PROGRESS RATES FOR SEPARATE SCHOOLS

The progress rates in each half-grade for the separate cities, schools, files, and other groups are given in the various tables included in this manuscript and in those appended.

It is interesting to note that the differences between the progress rates of schools and groups within a city are usually larger than the difference between the rates for entire cities. The extreme variations from the average rates are probably due to such local factors as race, social class, community attitude, or individual differences of principals and teachers. The fact that variations between city rates are not so large as those between the rates for schools or files is evidence that the larger groups of records tend to iron out the local factors.

Some of these extreme variations are easily accounted for. In city number one, school three, the extremely high progress rate in grade 8A is due to the skipping of this grade by two class sections during the semester ending June, 1924. One group of twenty-six pupils, and another of thirty-four, skipped the half-grade entirely. If the data from this school had covered more than four semesters this deviation would not be so noticeable. In the same school and during the same semester more than one-half the failures in 7A were directly traceable to one teacher who gave failures to seventeen of her twenty-eight home-room pupils.

The difference sometimes found in the progress rates of the separate schools of the same city is shown in the case of city three (Table 8). The number of records from each of the three schools is not equal, but they cover the same period of years in all of them. School five has higher progress rates than school three. In this case there is a difference in the number of foreigners in the two schools, with the better progress rate to the credit of the foreigners. There was also evidence that the pupils in school five were the older.

School number two of city four shows a very low progress rate, especially in grade 9. In order to check the accuracy of this rate a copy was secured of an analysis of the subject failures for that city, which had been made by the statistician of the school system. It showed that this particular school had failed 35 per cent of the enrollment of its freshmen English classes for three successive years during the period covered by this study. Failures in other subjects were also unusually high.

The progress rates in the one high school studied in city number five are also rather low. This was due to the numerous failures made by the same pupils in successive semesters. It would seem that some boys of this school found the work very unattractive or too difficult, and yet they neither quit school nor secured much credit.

The rates in city number six show the least variation between schools of any of the cities studied.

4. Progress Rates for Separate City Systems

Table 5 gives the progress rates in each half-grade for each of the cities. In no city is the rate uniform for grades 7B to 10A, and in most of them the fluctuations from grade to grade are both large and unequal.

TABLE 5

PROGRESS RATES IN 6-3-3 AND 8-4 SCHOOLS BY CITIES AND HALF GRADES

6-3-3 type

Grade	City 1	City 3	City 4	City 6	Mean	Median
7B	.945	.936		.950	.944	.945
7A	.939	.929		.943	.937	.939
8B	.944	.965		.966	.958	.965
8A	1.022	.963	1.000	.950	.984	.981
9B	.942	.946	.950	.933	.943	.944
9A	.985	.870	.961	.940	.939	.950
10B			.874	.817	.845	.845
10A			.919	.883	.901	.901

8-4 type

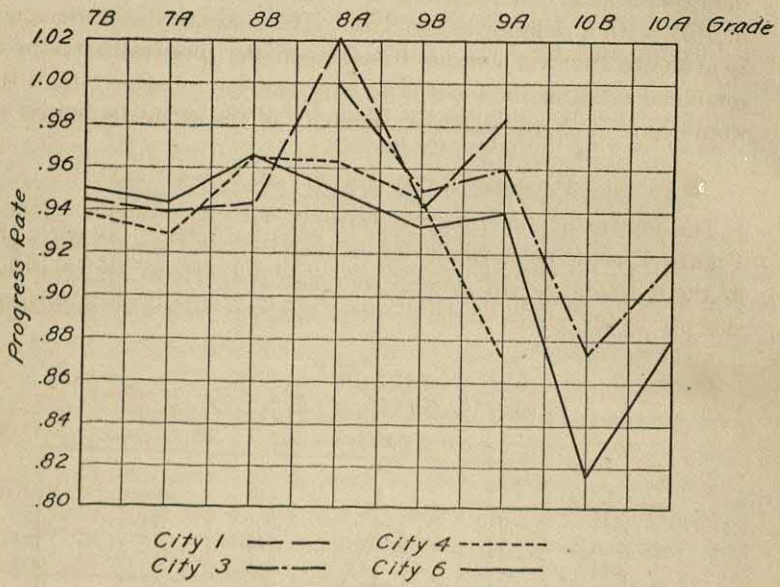
Grade	City 2	City 4	City 5	Mean	Median
7B	.921	.948	.883	.917	.921
7A	.955	.965	.908	.943	.955
8B	.956	.983	.935	.958	.956
8A	.970	.950	.965	.962	.965
9B	.891	.777	.866	.845	.866
9A	.891	.856	.879	.875	.879
10B	.883	.861	.864	.869	.864
10A	.923	.903	.910	.912	.910

5. Progress Rates for Separate 6-3-3 Cities

According to Figure 3, the curves for the progress rates of the separate 6-3-3 cities do not rise and fall gradually, but jump up and down from grade to grade. The largest fluctuation between grades 7B and 9A is in the curve of city one which starts at .944 in grade 8B, jumps to 1.022 in 8A, recedes to .942 in 9B, and rises again to .985 in 9A. This high point in 8A has already been attributed to the skipping of the grade by two class sections in one junior high school.

Fig. 3.

Progress Rates in 6-3-3 City Systems



The curve for city four also shows a large fluctuation in these grades. It starts from 1.00 in 8A, drops to .950 in 9B, and rises to .961 in 9A.

There is rather close agreement in the curves of cities three and six for grades 7B to 9B inclusive, the greatest difference between them being .014, in grade 7A. But in grade 9A the curve of city six rises slightly, while that of city three falls sharply, until the difference between the two at this point is .07. The cause of the drop in the curve for city three has already been attributed to a number of "incompletes" in the records of this city at the end of the junior high school work.

The progress curves for cities four and six have very similar trends throughout grades 8A to 10A inclusive, with the rate for city four consistently higher. Also the rates for cities four and one show similar trends for grades 8A to 9A.

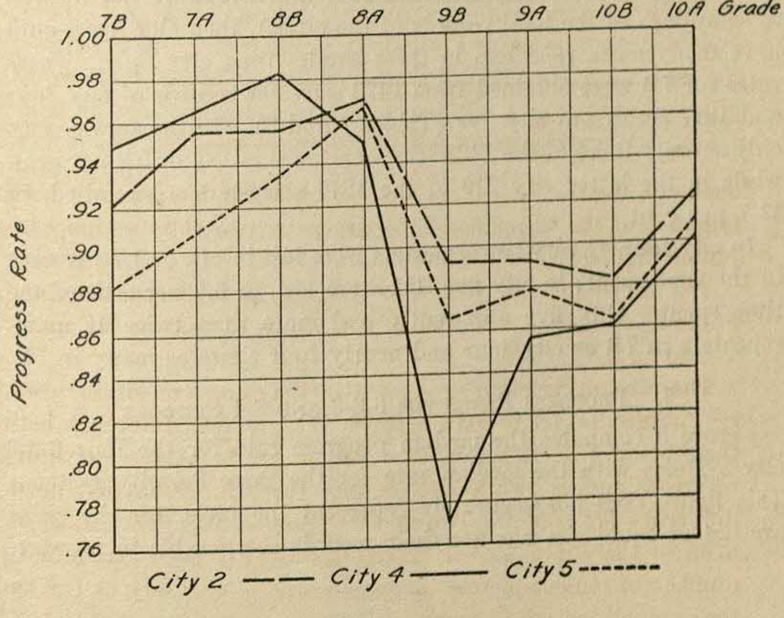
The progress curves for the four 6-3-3 city systems have the same general trends throughout. Starting from 7B there is a slight fall to 7A, a rise to 8B, a further rise to 8A, a decided drop to 9B, and again a slight rise to 9A which is at about the same level as 7B; then comes a very marked drop upon entrance to senior high school in 10B, with a definite rise in 10A. The similarity of these curves is evidence that conclusions based upon the progress rates of the combined cities of the 6-3-3 type have greater reliability than they would have if there were less similarity in the separate curves.

6. Progress Rates for Separate 8-4 Cities

The curves of the progress rates in 8-4 city systems, given in Figure 4, show more similarity in their trends than do the curves of the 6-3-3 cities. In general they rise from 7B to 8A, drop very sharply to 9B, which is the point of entrance to senior high school,

Fig. 4.

Progress Rates in 8-4 City Systems



rise to 9A, fall slightly to 10B, and rise markedly to 10A. In like manner, the similarity adds to the reliability of conclusions based upon the progress rates of the combined cities of the 8-4 type.

From grades 7B to 8B inclusive, city five has the lowest progress rate, city four the highest, and city two the middle ground. But in grade 8A city four takes low place and holds it throughout to 10A inclusive, while city two holds high place, and city five the middle ground. This change of city four from a distinctively high place in grades 7B, 7A, and 8B to a distinctively low position in the grades above 8B seems peculiar. The high point on its curve of .983 in 8B drops to a low point of .777 in 9B, which is a variation of .206 in the rate. This extreme low point in 9B has already been attributed in part to one senior high school which had failed 35 per cent of its 9B English classes during three successive years of the period covered by this study.

The differences between the rates of cities four and five for grades 7B, 7A, and 8B are quite large, being .065, .057 and .048 respectively. This is rather surprising since these two cities are the largest of the six studied and are less than 150 miles apart. If these rates would apply to all the pupils who are in grades 7B, 7A, and 8B in the two cities (an assumption which is not made in this study, since the records covered in cities four and five were not treated as samplings of the total records of the cities), then city five would have many more repeaters in these grades than city four. These rates for 7B were obtained from 1423 semester records of city four and 1877 records of city five (Tables 7 and 9). In the former city only seventy-three of the 1423 semesters were failed, or 5.2 per cent, while in the latter city 219 of the 1877 semesters were failed, or 11.7 per cent.

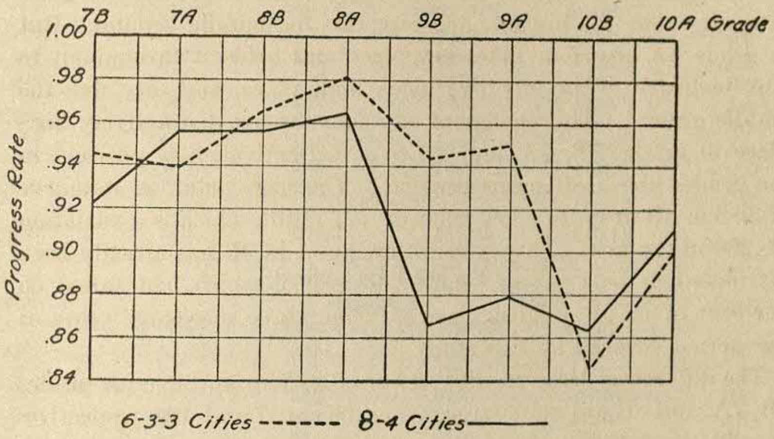
In city four, twenty-two semesters were lost in 8B, or 1.7 per cent of the time spent; in city five, 111 were lost, or 6.5 per cent of the time spent. City five apparently had more than twice as many repeaters in 7B as city four and nearly four times as many in 8B.

7. PROGRESS RATES FOR 6-3-3 AND 8-4 SCHOOLS

Figure 5 compares the median progress rate for the four 6-3-3 city systems with the median rate for the three 8-4 city systems. This figure does not accurately represent the facts, for the cities are not of equal size nor are their records comparable in number.

Fig. 5.

Medians of the Progress Rates of Four 6-3-3 City Systems And Medians of the Progress Rates of Three 8-4 City Systems



It is given merely as a graphic representation of the total group of facts shown in Table 5, page 51.

Table 6 gives the total findings for this portion of the study, weighted so as to show the results for all the records that were sampled. Progress rates for the two types of schools are given for each half-grade. This table is probably a more accurate representation of the facts of the study than is Table 5, and its figures will be used in making comparison between the two types of schools. However, the following grouping of the rates as found by the two methods shows a very close agreement in them:

A Comparison of the Progress Rates for 6-3-3 and 8-4 Type Schools Obtained (1) by Finding the Median of the City Rates and (2) by Computing the Rate from the Weighted Total Findings

Grade	6-3-3 Schools		8-4 Schools	
	Median of City Rates	Computed from Totals	Median of City Rates	Computed from Totals
7B	.945	.948	.921	.917
7A	.939	.940	.955	.945
8B	.965	.963	.956	.955
8A	.981	.961	.965	.964
9B	.944	.937	.866	.874
9A	.950	.939	.879	.886
10B	.845	.824	.864	.880
10A	.901	.887	.910	.919

TABLE 6

WEIGHTED TOTALS OF THE FINDINGS

For 8-4 type schools

Grade	Semesters			Skipped	Progress rate
	Spent	Progressed	Failed		
7B	7618	6987	638	7	.917
7A	7283	6889	554	158	.945
8B	7033	6722	367	51	.955
8A	6624	6391	263	31	.964
9B	4884	4274	617	3	.874
9A	4270	3784	493	4	.886
10B	3501	3081	432	7	.880
10A	2802	2576	228	1	.919
	44,015	40,704	3,592	262	.924

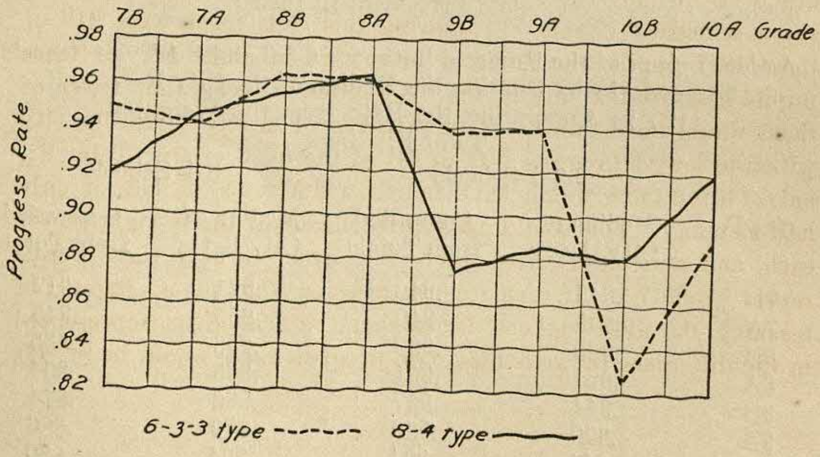
For 6-3-3 type schools

Grade	Semesters			Skipped	Progress rate
	Spent	Progressed	Failed		
7B	7788	7384	408	4	.948
7A	7204	6778	439	8	.940
8B	6722	6476	255	9	.963
8A	6214	5975	309	70	.961
9B	6569	6158	432	16	.937
9A	5854	5500	370	8	.939
10B	3640	3001	648	5	.824
10A	2670	2370	318	12	.887
	46,661	43,642	3,179	132	.935

Figure 6 shows in graphic form the progress rates obtained from

Fig. 6

Progress Rates for Types of Schools
Computed from the Weighted Total Findings



the weighted total records of all 6-3-3 and all 8-4 schools, as given in Table 6.

For 6-3-3 schools the low points in the rates for the junior high school are in grades 7A, 9B, and 9A. This corresponds with the results found in Philadelphia, where the promotion percentages for junior high schools for the nine and one-half years ending January, 1927, were lowest in 9B and next lowest in 9A. However, they were next to the highest in 7A, and highest in 7B, which is not in agreement with our findings (11, p. 28). These promotion percentages are proportionally, though not numerically, comparable with our progress rates.

For the 8-4 schools the low point in the rates is in grade 7B with a gradual rise to a high point in 8A. This gradual rise in the rate also occurs in Philadelphia, where promotion percentages for elementary schools for the ten years ending January, 1927, averaged 85.9, 89.0, 89.3, and 93.3 for grades 7B, 7A, 8B, and 8A respectively (11, pp. 21-24).

The differences between the progress rates for the two types of schools in grades 7A, 8B, and 8A are very small; but in 7B, 9B, and 9A they are .031, .063, and .053 respectively (Figure 6).

These differences in the progress rates of the two types of schools appear very small when expressed in terms such as given in the tables. In grade 7B there is a difference of only .067 between the highest city rate of the 6-3-3 type schools and the lowest city rate of the 8-4 schools (Table 5). This seems almost a negligible amount. However, as has already been stated, it applies to 1877 pupils of grade 7B in nine school buildings of city five and over a period of seven semesters (Table 7). During this time there were 219 of these 1877 pupils who failed of promotion in grade 7B. If these pupils had lived in any of the 6-3-3 cities, it seems that fewer of them would have failed. If they had lived in city three, the city with the lowest progress rate in 7B of the 6-3-3 group (Table 8), only 116 of them would have failed: a difference of 113, or only half as many. This would make three classes of thirty-eight pupils each, and necessitate three teachers in order to have these pupils repeat grade 7A. If each teacher received $700 for a semester of teaching, the additional cost for teachers' salaries alone, represented in the difference between these two progress rates would be $2,100.

TABLE 7

CITY FIVE

Totals of Nine Elementary Schools for Seven Semesters

Grade	Semesters spent	Semesters progressed	Semesters failed	Semesters conditioned	Dropped	Left	Transferred	Progress rate
Boys								
7B	894	778	116		2	28	1	.870
7A	880	790	90		3	21	4	.897
8B	802	736	62	4		14	3	.917
8A	802	763	34	5	3	16	1	.951
Girls								
7B	983	880	103		1	21	3	.895
7A	940	866	74		4	29	1	.921
8B	905	860	45		6	30	2	.950
8A	840	821	15	4		25	1	.977
Boys and girls								
7B	1877	1658	219		3	49	4	.883
7A	1820	1656	164		7	50	5	.908
8B	1707	1596	107	4	6	44	5	.935
8A	1642	1584	49	9	3	41	2	.965

TABLE 8

CITY THREE

Grade	Semesters spent	Semesters progressed	Semesters failed	Semesters incomplete	Semesters skipped	Summer school	Progress rate
Summary of records from Junior High School Three. Random pages. 751 pupils.							
7B	511	467	44				.913
7A	552	498	54	1	1		.904
8B	540	515	25				.954
8A	531	501	28	2		1	.944
9B	516	481	35	1	1		.932
9A	436	378	28	31	1	2	.866
Summary of records from Junior High School Four. Random pages. 320 pupils.							
7B	233	225	8				.966
7A	223	214	7	2			.960
8B	226	221	4	1			.978
8A	245	244	1				.996
9B	256	246	10				.961
9A	228	194	11	23			.851
Summary of records from Junior High School Five. Random pages. 240 pupils.							
7B	178	173	5				.972
7A	166	161	5				.970
8B	157	155	2				.987
8A	147	144	3				.979
9B	118	115	2	1			.974
9A	78	74	3	1			.949
Totals for City Three. 1311 pupils.							
7B	922	865	57				.938
7A	940	873	66	2	1		.929
8B	923	891	31	1			.965
8A	923	889	32	2		1	.963
9B	890	842	47	2	1		.946
9A	742	646	42	55	1	2	.870

8. PROGRESS RATES FOR GRADES 9B AND 9A FOR THE TWO TYPES OF SCHOOLS

The difference between the rates for the 6-3-3 schools and those for the 8-4 schools in grades 9B and 9A are large. Figure 6 shows a difference of .063 between the rates for the two types in 9B and a difference of .053 in 9A. It seems unlikely that we could charge each of the 6-3-3 cities with standards for passing work in grade 9 which are too low, or, to put the matter in another way, that we could insist that each of the 8-4 cities maintains standards in grade 9 that are too high.

The difference can scarcely be attributed to differences in health, parentage, attitude of the homes or communities, or the teacher and principal factors. The rates may be, and undoubtedly are, influenced by all of these. But in groups of pupils as large as these, with many communities included, with several principals and scores of teachers involved, it seems improbable that these factors would be any more operative in the group of 8-4 cities than in the 6-3-3 cities. And since in each of the schools of the 6-3-3 type, the rate is higher than in any school of the 8-4 type, (with the single exception of city three in 9A, Table 5), it seems logical to infer that the difference may be due to the type of organization.

The possibility that the difference is mainly the result of a different method for measuring progress in senior high schools from that used in junior high schools was discussed in Chapter I; the conclusion was there reached that the progress rates of the two methods are comparable. However, this possibility should be given a little further consideration.

The method of computing progress in grade 9B may be slightly more favorable for progress in senior high schools than in junior high schools. A failure in junior high school means that the pupil has failed almost a full year's work, for promotion plans are usually modified in junior high schools so as to give pupils every possible advantage, as explained by Mr. Leonard V. Koos:

> "*Modified plans of promotion in the junior high school:* Study of the junior high schools shows that a number of different means is being used to adapt rates of promotion in these grades to the wide variety of ability represented among any large number of pupils and to forsake as the sole practice the rigid annual or semi-annual promotion typically in use in the upper grades of the eight-year elementary school. These means include promotion by subject, differing rates of progress

> through ability grouping, as mentioned while discussing this subject in the foregoing chapter, study-coach plans, remedial rooms, special-adjustment rooms and schools for irregular pupils, and individualized teaching." (28, p. 364).

Since several of these plans were in use in the junior high schools of this study, the author concludes that all failures of promotion actually found on the records of junior high schools for grade 9B represented a very unsatisfactory quality in a majority of the pupils' work of the grade. A failure in 9B in senior high school was credited, according to our scheme of computing progress, if a pupil failed half or more than half of his work. In both schools lack of progress occurred only when half or more than half of the 9B work was unsatisfactory. In view of these facts, the progress rates in 9B and 9A for the two types of organization, are believed comparable for all practical purposes.

If the plan for crediting progress in 9B is more favorable to senior than to junior high schools, then the progress rate in 9B would tend to be higher for 8-4 schools than for 6-3-3 schools. Furthermore, we have already explained that subject failures in junior high school tend to accumulate without loss of progress until grade 9A is reached when they appear as "incomplete," and that such records were counted as failures of promotion and tended to lower the progress rates for junior high schools in 9A. Therefore, the rate in 9A would tend to be lower for 6-3-3 schools than for 8-4 schools. But in spite of these two influences, which tend to bring the rates of the two types of schools together in 9B and 9A, the differences are still large, and are favorable to the 6-3-3 schools.

In 9B the progress rate is .937 for the 6-3-3 schools and .874 for the 8-4 schools, or a difference of .063 (Figure 6). In 9A the rates are .939 for 6-3-3 schools and .886 for 8-4 schools, or a difference of .053. If these rates actually measure, on a comparable basis, the extent to which pupils make progress in the two types of schools, then there is considerable economy of time resulting from the 6-3-3 types in grades 9B and 9A in the schools studied.

In grade 9B in the 6-3-3 schools, 411, or 6.3 per cent of the 6,569 semesters in school, resulted in no progress; while in the 8-4 schools, 610, or 12.6 per cent of the 4,884 semesters represent no progress (Table 6). In 9A in the 6-3-3 schools, 354, or 6.1 per cent of the 5,854 semesters in school, resulted in no progress; while in the 8-4 schools 468, or 11.4 per cent of the 4,270 semesters, resulted in none.

Or to state the same thing in another way, according to Table 6, in the 6-3-3 schools, 6,158 pupils progressed 9B with a net loss of 411 semesters due to failures; *i.e.,* about 6.7 per cent of the pupils lost a semester. But in the 8-4 schools, 4,274 pupils progressed 9B with a net loss of 610 semesters; about 14.3 per cent lost time. If these 4,274 pupils had attended the 6-3-3 schools and progressed at the average rate in those schools, only 286 instead of 610 would have lost a semester.

Likewise, 5,500 pupils progressed 9A in 6-3-3 schools with a net loss of 354 semesters; about 6.4 per cent lost time. But in the 8-4 schools, 3,784 pupils lost 468 semesters, or about 12.3 per cent lost a semester. If the latter had attended the 6-3-3 schools and progressed at the average rate for these schools, only 242 instead of 468 would have lost a semester.

In city number four progress rates were obtained for two groups of pupils who came from approximately the same neighborhood, with a number of pupils from the same families in both groups. One group took grade 9 work in the senior high school number two, the other completed the same grade in a new junior high school number four, after the system had been reorganized on the 6-3-3 plan. The records of the first group cover the years 1917 to 1925 inclusive. Those for the second group cover the four semesters from September 1925 to June 1927. Since there has been a tendency for most schools to increase their progress rates in recent years, the rates for these two groups are not strictly comparable.

The progress rates for the two groups are shown below. Those for the junior high group are much the higher with a difference of .295 in grade 9B, and .180 in grade 9A.

Progress Rates in Grade 9

Grade	Senior High School	Junior High School	Difference
9B	.687	.982	.295
9A	.790	.970	.180

City four also afforded an opportunity to secure additional records for grades 9B and 9A from both 6-3-3 and 8-4 type schools. This was done in a second senior high school and a second junior high school. When these records are combined with those just discussed, the following progress rates are obtained:

Progress Rates in Grade 9

Grade	Two Senior High Schools	Two Junior High Schools	Difference
9B	.777	.950	.173
9A	.856	.961	.105

If we assume that the enrollment in city number four is 1,000 in 9B and 1,000 in 9A, and that the old progress rate of the 8-4 plan as shown above is applicable to all these pupils, then 223 of them would fail of promotion in 9B and 144 in 9A. But if the new progress rate of the 6-3-3 plan as found in this same city were applicable to all these pupils, then only fifty of them would fail in 9B and thirty-nine in 9A. This is a difference of 278 for both half-grades. If we also assume that each pupil who failed must repeat only half of the work of the grade, or two subjects, then the repeaters in grade 9B would make nearly twelve more recitation classes of thirty pupils each under the 8-4 plan than under the 6-3-3 plan, and the repeaters in 9A would make seven more classes under the 8-4 plan. If each of the extra teachers thus made necessary received $800 a semester and taught four such classes of repeaters, the added cost of the 8-4 plan would be about $3,600 a semester for teachers' salaries only. This would be an added cost of $1.60 a semester for each of the 2,000 pupils in grades 9B and 9A.

9. Attendance at Summer School

In computing the progress rates in this study no account was taken of the number of pupils who attended summer school. On the basis of time spent a six-weeks summer session is about one-third of a semester, but on the basis of the amount of work that is commonly carried, it is the equivalent of almost half a semester. If the 6-3-3 schools have more pupils who attended summer school than have the 8-4, then the higher progress rates might be largely the result of greater use of summer school, rather than any inherent difference in the type of organization. To what extent do the pupils of the two types of schools attend summer school?

The following table is a summary of the number of pupils who attended summer school in the two types of schools, as shown in the weighted total findings for the six cities (Table 6). The per cent column shows the relation between the number of pupils who attended summer school in each half-grade and the number who progressed that half-grade.

Weighted Total Summers for the Six Cities

Grade	All 6-3-3 Schools Number	All 6-3-3 Schools Per cent	All 8-4 Schools Number	All 8-4 Schools Per cent
7B	9	.12	26	.38
7A	48	.71	11	.16
8B	24	.38	25	.38
8A	32	.54	47	.70
9B	30	.46	47	1.09
9A	110	2.00	37	.98
10B	55	1.82	20	.64
10A	42	1.83	21	.81
	350	.82	234	.57

The number of pupils attending summer sessions is in no case as large as three-fourths of 1 per cent for grades 7B to 8A inclusive, in either type of school. It is evident that such a small proportion would have no appreciable effect upon the progress rates in these grades.

In 9B of the 8-4 schools 1.09 per cent attended summer school and in 9A nearly 1 per cent. If each of these summer school pupils earned enough credit during the summer to prevent repeating a grade, this would raise the progress rates about .01 in these grades.

In 9B of the 6-3-3 schools less than half of 1 per cent attended summer school, while in 9A, 2 per cent took summer work. If attendance in summer school enabled each of these pupils to avoid losing a year of progress, then the progress rate in 9A would be raised about .02. It is perhaps not true that summer school raises the rates to this extent, but it certainly does affect them somewhat especially in 9B and 9A of 8-4 schools and 9A of 6-3-3 schools.

Summer school is apparently not an equally strong factor in all the cities studied. In the 8-4 schools its popularity varies at different grade levels. In city two a great many pupils take summer school work, while in grades 7 and 8; in city five, many attend while in grades 9 and 10; and in city four the attendance is scattered throughout grades 7, 8, 9, and 10.

In the 6-3-3 schools, very few pupils take summer work in cities one and three, and in cities four and six it is confined principally to pupils in grades 9A, 10B and 10A.

Why should attendance in summer school increase in grade 9? Reference to Figure 6 shows that 9B is the low point in the progress rates for 8-4 schools, while 9B and 9A are low points in the rates for junior high schools. Apparently 9B and 9A pupils in

8-4 schools attend summer school in order to make up failures incurred in the first two semesters of senior high school, while 9A pupils of junior high schools attend summer school in order to remove a record of "incomplete" for junior high work, enabling them to enter senior high without a shortage of credits.

Summer school attendance continues high during the first two semesters of senior high in 6-3-3 schools, probably in an effort to make up failures at this point.

10. Number and Location of Skips

Do the 6-3-3 schools have a higher progress rate than the 8-4 schools because a larger percentage of their pupils skip a half-grade? What is the grade location of the skips? The following table is a summary of the number of pupils who skipped each half-grade in each type of school, with the relation between this number and the number of pupils who have progressed the half-grade.

Weighted Total Skips for the Six Cities

Grade	All 6-3-3 Schools		All 8-4 Schools	
	Number	Per cent	Number	Per cent
7B	4	.05	7	.10
7A	8	.12	158	2.20
8B	9	.14	51	.75
8A	70	1.17	31	.48
9B	16	.25	3	.07
9A	8	.15	4	.11
10B	5	.17	7	.23
10A	12	.50	1	.04
	132	.30	262	.64

In the 6-3-3 schools the only grade in which the skips exceed one-half of one per cent is 8A. Here the skips amount to 1.17 per cent and are sufficient in number to appreciably affect the progress rate in this half-grade. We have already noted that city one had sixty-one of the total of seventy skips found in this half-grade (Table 12).

In the 8-4 schools the only grade in which the skips exceed three-fourths of one per cent is 7A; here they amount to 2.2 per cent. We have also noted that 149 of the total of 158 skips in this half-grade are in city two, and were sufficient in number markedly to affect the rate of this city at this point (Table 10). It would appear, then, that the number of skips does not account for the generally higher progress rates of the 6-3-3 schools, but that skips do help account for a high rate in 8A of 6-3-3 schools and in 7A of 8-4 schools.

This study shows very little acceleration of pupils during their junior high school careers. Out of 46,661 semesters spent in junior high schools only 132 semesters, or .28 of 1 per cent, were skipped (Table 6). In no case did a pupil gain two semesters in his three years in junior high. This is by no means equal to the amount of acceleration found in the junior high schools of New York City as given in the following quotation from Mr. Koos:

> "By way of indicating the extent of acceleration effected in one of the situations . . ., the junior high schools of New York City, certain numerical data may be quoted from a study reported by a survey committee. . . Of all pupils—9,295 in number—completing the three-year junior-high-school course in January and June in 1922, thirteen had done the work in three terms (semesters); 4,086, in four terms; 1,546, in five terms; 3,188, in six terms; 386, in seven terms; 67, in eight terms; and 9, in nine or more terms. On the assumption that completion in six terms is normal progress, this is 9,757 terms gained and 548 terms lost, or a net gain of 9,209 terms. This is, again, a net gain of almost a half-year per pupil. . . Another way of interpreting these data is to say that 5,645 pupils, or more than three-fifths of all, progressed at a rate more rapid than normal." (28, pp. 367-368)

11. Number and Location of Failures

Do the 6-3-3 schools have a higher progress rate than the 8-4 schools because of fewer failures? In what half-grades do failures occur?

The following is a summary of the number and per cent of failures in each grade for each type of schools:

Weighted Total Failures for the Six Cities

Grade	All 6-3-3 Schools Number	All 6-3-3 Schools Per cent	All 8-4 Schools Number	All 8-4 Schools Per cent
7B	408	5.6	638	9.1
7A	439	6.4	554	8.0
8B	255	3.9	367	5.4
8A	309	5.1	263	4.1
9B	432	7.0	617	14.4
9A	370	6.7	493	13.1
10B	648	21.5	432	14.1
10A	318	13.4	228	8.8
	3179	7.29	3592	8.82

In the 6-3-3 schools there is no grade of the junior high in which the percentage of failures is higher than seven; therefore failures do not greatly affect the progress rates in these grades. However, the percentage of failures is much larger in the senior high schools of the 6-3-3 type.

In the 8-4 schools the percentages of failure are 9.1 in grade 7B and eight in 7A, but they are scarcely half as large in 8B and 8A. In grade 9B the percentage of failures is 14.4 and in grade 9A it is 13.1. It appears, therefore, that the low progress rate for 8-4 schools in 7B is directly the result of the failures at this point, and that the low rates in 9B and 9A are also due to the many failures in these half-grades.

The failures are well distributed among the various cities. The greatest frequency of failure for the 8-4 schools is in grade 9, with the least number in 8A. The greatest frequency of failure for the 6-3-3 schools is in grade 10, with a tendency in most of them for the low point of the junior high school grades to come in grade 9.

12. Conclusions and Findings

1. Progress rates differ between schools of the same city and between class sections of the same school.

2. Progress rates obtained from the records in the separate files of the same school differ considerably. The rate for the dropped file is nearly always much the lowest.

3. The local factors which affect progress rates tend to cancel out in studying large groups of records over successive years.

4. No city has a uniform progress rate for grades 7B to 10A inclusive, and in some cities the fluctuations in the rate from one half-grade to another are very large.

5. The curves of the progress rates for the four 6-3-3 city systems have the same general trends. Starting from 7B they fall to 7A, rise to 8B, rise again to 8A, drop to 9B and rise slightly to 9A.

6. The curves of the progress rates for the three 8-4 city systems show a close similarity in their trends. Starting from 7B they rise to 7A, rise again to 8B and 8A, drop very sharply to 9B, and rise slightly to 9A.

7. Large differences between the progress rates of the city systems of the 6-3-3 types are found only in grades 8A and 9A. In the 8-4 type the differences in grade 9B are very large; those in grades 7B, 7A and 8B are moderately large for two of the cities.

8. In computing progress rates from the total data for the two types of schools there is very little difference in the rates obtained by the two methods of finding the median of the city rates and computing the rate from the weighted total findings.

9. The low points in the rates for the junior high schools are in grades 7A, 9B, and 9A. The high point is 8B.

10. The low point in the rates for elementary schools is in grade 7B with a general rise to a high point in 8A.

11. In grades 7A, 8B, and 8A there is little difference in the progress rates of the two types of schools.

12. The difference between the progress rates for the two types of schools in 7B is .031. This represents considerable economy of the 6-3-3 type over the 8-4 type.

13. The difference between the progress rates for the two types of schools is .063 in 9B and .053 in 9A. This represents a decided economy of time of the 6-3-3 type over the 8-4 type.

14. About three-fifths as many semesters were lost by pupils in grade 7B in 6-3-3 schools as were lost by an equal number in 8-4 schools.

15. About one-half as many semesters were lost by pupils in grades 9B and 9A in 6-3-3 schools as were lost by an equal number in 8-4 schools.

16. The progress rates in grade 9B and 9A for two groups of pupils from the same neighborhood of one city were very much higher for the group that attended junior high school than for the group that attended senior high school.

17. Progress rates in grades 9B and 9A were very much higher in one city, since its schools have been organized on a 6-3-3 plan, than they were while organized on an 8-4 plan.

18. Attendance in summer school has very little effect upon the progress rates in junior high school except in grade 9A, where it may raise the rate about .02.

19. Attendance in summer school has very little effect upon the progress rates in elementary school, except in grades 9B and 9A where it may raise the rates about .01.

20. In junior high schools the only grade in which there are enough skips to affect the progress rate is 8A, and this situation exists in only one of the four cities.

21. In elementary schools the only grade in which there are

enough skips to affect the progress rate is 7A, and this situation exists in only one of the three cities.

22. In the junior high schools the percentage of failures does not exceed seven in any half-grade.

23. In elementary schools the percentages of failure are 9.1 in grade 7B and 8.0 in grade 7A, which accounts for the low progress rates at these points.

24. In the ninth grade of senior high schools the percentages of failure are 14.4 in 9B and 13.1 in 9A, which accounts for the low progress rates at these points.

25. Very few pupils completed the three-year junior high school course in less than six semesters.

26. According to this study, then, pupils do progress grades 7, 8, and 9 in less time in 6-3-3 schools than in 8-4 schools; the saving of time occurs in half-grades 7B, 9B, and 9A.

CHAPTER V

BRIDGING THE GAP

Educators often speak of the point between the work of the senior high school and that of the schools just below it as "the gap." The phrase is probably more suggestive of a tendency than descriptive of actual facts. The term is sometimes used to indicate a tendency for pupils to quit school at this point, making no attempt even to enter senior high school. It is also used to indicate a tendency for pupils to fail of promotion in large numbers in the first few semesters after they have entered high school. For the purposes of this study the second meaning is used, no measure being made of the number of pupils finishing either elementary or junior high school who failed to enter senior high school.

1. THE GAP BETWEEN GRADES 8A AND 9B

The term "gap" originally referred to the point between grades 8 and 9 in the old 8-4 type schools. This breach between elementary and senior high school was evidenced by a larger percentage of failures in grade 9 than in grade 8, and by the failure in grade 9 of many pupils who had been fairly successful in grade 8. This gap as it existed in the schools of Chicago is shown in a study by Don C. Rogers, principal of one of the Chicago elementary schools. He found that less than 6 per cent of the pupils in grade 8A of elementary schools failed of promotion during the semester which ended January 1925; while in the senior high schools, 15.4 per cent of all school subjects were failed in 9B, and 13.7 per cent in 9A. He raises the question whether the new junior high schools of Chicago will bridge this gap between 8A and 9B (37, pp. 249-252).

Further evidence of the gap between the elementary grades and senior high school is given by Mr. Boyer in an analysis of promotion rates in Philadelphia. The promotion percentages for the ten years ending January 1926 were 89.2 in 8B, 93.0 in 8A, 69.1 in 9B and 76.6 in 9A (9, pp. 10, 23). Odell obtained an average progress rate for the schools of Illinois of .96 for 8B, .98 for 8A and .74 for 9A; he does not give a rate for 9B (33, pp. 27-30).

2. JUNIOR HIGH SCHOOL AS A BRIDGE OVER THIS GAP

Reference to Figure 6 (page 56) shows that the progress rate for the combined 8-4 schools drops from .964 in 8A to .874 in 9B, or a difference of .09. More than three times as many pupils fail in 9B as in 8A, which is evidence of a large gap in 8-4 schools between these grades. In the 6-3-3 schools, however, the rate falls from .961 in 8A to .937 in 9B, or a difference of only .024. Here only about 50 per cent more pupils fail in 9B than in 8A, which is evidence that the junior high school has done much to bridge this gap between 8A and 9B. The rate for 9A rises slightly from that of 9B to .939, which is further evidence of a very small gap between grades 8 and 9 in 6-3-3 schools.

Figure 3, page 52, shows the extent of this gap in each of the separate 6-3-3 cities. The considerable drop in the rates from 8A to 9B in cities one and four indicates an apparent rather than a real gap, due to the abnormally high rates of 1.022 and 1.00 in grade 8A, resulting from causes previously discussed.

Figure 4 (page 53) shows the extent of this gap in each of the separate 8-4 cities. The rate for city four drops from .950 in 8A to .777 in 9B, a difference of .173 (Table 9). In this city more than four times as many pupils fail in 9B as in 8A. In cities two and five the gap is also pronounced, though not so large as in city four (Tables 10, 8).

3. FACTORS INVOLVED

The possibility of these differences being due to the use of one method of crediting progress in junior high schools and another in senior high schools was discussed in the preceding chapter and dismissed as improbable.

It is possible that the higher progress rate in grade 9 of junior high schools cannot be credited to the type of organization alone, but that it is due to a different purpose, a different sort of environ-

TABLE 9

CITY 4

Total Type Records

Total of all 6-3-3 type records. 417 pupils.

Grade	Semesters spent	Semesters progressed	Semesters failed	Semesters skipped	Summer school	Semesters incomplete	Progress rate
8A	72	72					1.00
9B	427	406	22	1	5		.950
9A	418	402	16		6	3	.961
10B	415	363	52		5	18	.874
10A	284	261	26	1	16	10	.919

Weighted totals for elementary schools. 1,014 records, representative of 1,663 pupils.

7B	1423	1350	73				.948
7A	1386	1338	57	9			.965
8B	1298	1276	33	11			.983
8A	1172	1114	59	1			.950

Totals for four-year senior high schools. 598 pupils.

9B	629	489	143	1	6	53	.777
9A	501	429	77	2	7	32	.856
10B	440	379	64	2	2	18	.861
10A	372	336	37	1	8	10	.903

TABLE 10

WEIGHTED TOTALS FOR CITY NUMBER TWO

1,440 Records, Representative of 4,949 Pupils from Years 1918 to 1927 Inclusive

Grade	Semesters spent	Semesters progressed	Semesters failed	Semesters skipped	Summer school	Pupils dropped	Progress rate
7B	4318	3979	346	7	26		.921
7A	4077	3895	333	149	11		.955
8B	4028	3850	223	40	25		.956
8A	3810	3693	146	29	44		.970
9B	3794	3384	411		11	149	.891
9A	3380	3013	367		2	94	.891
10B	2777	2454	327	4		55	.883
10A	2218	2047	171		5	67	.922

ment, or a lower standard of scholarship than has the senior high school. The purpose of senior high school is often spoken of as vocational—rather specific training for future lines of work—while that of junior high school is ''broadening'' or ''developmental'' or ''exploratory.'' The content of the senior high school curriculum is very specific and lends itself to a rigid system of grading, while that of junior high school is quite the opposite, and any comparison between the two is said to be not only unfair but impossible. While these facts are recognized, the author still believes that progress rates do furnish a valid means of comparing the extent to which schools secure the success of their pupils.

The environment probably does influence progress rates; ninth grade pupils will probably do better work in junior high schools than in senior high schools. In junior high the pupils are accustomed to the teachers, the building routine, the methods of administration, and the curriculum, and have a greater ''sense of belonging,'' since they are the oldest group in the school, whereas they are the youngest in a senior high school.

If environment is important, then there should also be a gap between grades 6A and 7B in 6-3-3 schools, due to entrance into a new building and an unfamiliar situation. But reference to Figure 2, (page 38) shows no such facts in the smaller schools of Iowa—indeed the progress rate for the 6-3-3 schools actually rises from .948 in 6A to .967 in 7B, while in the 8-4 schools it falls from .991 to .976, showing no gap between 6A and 7B in 6-3-3 schools. Figure 1 (page 37), however, shows the opposite tendency in those 6-3-3 schools having annual promotions. In these schools the rate falls from .968 in grade 6 to .935 in grade 7, but in the 8-4 schools it falls from .971 in grade 6 to only .961 in grade 7, showing some evidence of a gap between grades 6 and 7 in these 6-3-3 schools.

In Philadelphia schools there is an apparent hard spot for pupils who go from 6A to 7B in elementary schools, but no such difficulty is encountered by the pupils of that city who enter 7B in the junior high schools. The average percentage of all pupils promoted from 6B, for the ten years ending January 1926, is 88.2; for pupils who take 7B work in elementary schools the percentage promoted is 85.9, a drop of 2.3 points; but for pupils who take 7B work in junior high schools the average for the past eight and one-half years is 91.2 per cent—a rise of three points (9, pp. 10, 17). The promotion percentages in 7B for the five years ending January 1926 averaged 5.4 points higher in junior high schools than in elementary schools (9, pp. 25-26), showing that pupils did not have difficulty in adjusting to the new environment of a junior high school.

Standards of scholarship in the two types of schools cannot be readily measured. Requirements in senior high school are likely to be more specific because of its more specific curriculum, but this does not necessarily mean that there is less learning in the junior high schools. Porter, who made a comparative study of the scholastic achievements of certain junior and non-junior high school pupils in Minneapolis, found that the non-junior group in 7A and 8A did very little better on six achievement tests than did the junior high school group, and this in spite of the fact that the non-junior group had twice as many grade repeaters and spent twice as much time on reading; also the junior high group gave outside time to extracurricular activities. When the marks given by teachers in senior high school were compared for two groups of pupils, it was found that the group which had had training in the junior high schools had done somewhat better, especially in mathematics and the natural sciences (35, pp. 99-102).

There appears to be no evidence, then, to substantiate the opinion that pupils in grade 9 make fewer failures in junior high schools than in senior high schools because of differences in the purpose, the environment, or the standards of scholarship in the two types of schools. Therefore, the author concludes that the findings of this study are evidence that the junior high school has, in a large measure, succeeded in bridging the gap between grades 8A and 9B.

4. THE GAP BETWEEN 9A AND 10B IN 6-3-3 SCHOOLS

Apparently a great many writers believe that the gap is bridged if pupils are successfully carried through grade 9. This is partly true in 8-4 type schools, for the progress rates rise from 9B to 10A in spite of the fact that occasional subject failures in senior high school are accumulating until a pupil's credits fall two below the number he should have earned for the time he has been in high school, and therefore, he is finally credited with a failure of promotion according to the method used in this study. But what of the pupils in 6-3-3 type schools who have been successful in grade 9 in a junior high school and enter 10B in a senior high school? Is the gap really bridged for them?

Since the progress rate of 6-3-3 schools falls from .939 in 9A to .824 in 10B we must conclude that there is also a definite gap at the point of entering high school in this type of school. Both the cities for which we have evidence on this point show this gap. In city six the rate drops from .940 in 9A to .817 in 10B, or a difference of .123 (Table 11); in city four it drops from .961 in 9A to .874 in 10B, or a difference of .087 (Table 9).

The gap is further indicated by the progress rates given below for two groups of pupils in city four who attended both a junior high school and a three-year senior high school. The rates for both groups drop sharply from grade 9A to grade 10B.

Progress Rates for Junior High School Pupils in City Four

Schools Attended	8A	9B	9A	10B	10A
J.H.S. 4 and S.H.S. 2	1.00	.982	.970	.878	.947
J.H.S. 3 and S.H.S. 1		9.29	.955	.871	.908

TABLE 11

CITY SIX

Grade	Semesters spent	Semesters progressed	Semesters failed	Semesters skipped	Summer school	Pupils dropped	Progress rate
Dropped file for all Junior and Senior High schools. Sections of the alphabet; about three-tenths of the cards. 942 pupils.							
7B	435	402	33			1	.924
7A	408	355	54	1	2	1	.870
8B	414	384	30		1	7	.927
8A	399	354	46	1	3	4	.887
9B	433	373	61	1	1	8	.861
9A	344	302	43	1	8	2	.878
10B	244	157	87			10	.643
10A	125	96	29		1	6	.768
Weighted totals for all live files and graduate files. 1,787 records, representative of 5,907 pupils.							
7B	4386	4206	184	4	9		.958
7A	3906	3785	130	4	42		.962
8B	3479	3418	70	9	20		.982
8A	3164	3093	77	6	22		.977
9B	3081	2981	116	11	22		.967
9A	2746	2656	102	4	76		.967
10B	2412	2115	306	5	50		.876
10A	1969	1789	195	11	23		.908
Weighted totals for City six. 2,729 records for years 1923 and 1927 inclusive; representative of 9,047 pupils.							
7B	5836	5546	294	4	9		.950
7A	5266	4968	310	7	48		.943
8B	4859	4698	170	9	23		.966
8A	4494	4273	230	9	32		.950
9B	4524	4224	319	14	25		.933
9A	3893	3663	245	7	102		.940
10B	3225	2638	596	5	50		.817
10A	2386	2109	292	11	26		.883

5. THE GAP MERELY POSTPONED

It appears, then, that the gap which formerly occurred between 8A and 9B in 8-4 schools has not really been bridged by the 6-3-3 type of organization, but has merely been postponed a year, and is found between grades 9A and 10B in 6-3-3 schools.

The above findings compare with Boyer's in Philadelphia where the average promotion percentages in junior high schools for the eight and one-half years ending January 1926 were 86.7 in 9B and 88.7 in 9A, but the average in senior high schools for the previous ten-year period was 75.2 in 10B and 80.9 in 10A, which also show a gap between 9A and 10B. The fact that these promotion percentages are practically, but not numerically, comparable with our progress rates was previously discussed. The Philadelphia figures also exaggerate the size of the gap because of the different methods of computing promotion percentages for junior high and senior high.

Perhaps the situation is not so entirely a matter of postponement of the gap as these figures appear to show. More facts would be needed before this could be determined. Advocates of the 6-3-3 plan maintain that a much larger percentage of the pupils of grade 7 of a junior high school actually enter grade 10 than do those of grade 7 of an elementary school. Also that pupils of less ability, who are less interested in school work as they find it, are the ones who drop out in grades 7, 8, and 9 of 8-4 schools; but in 6-3-3 schools the varied curriculum and better adapted school life of the junior high school hold many of these pupils of low ability and little interest until they have finished grade 9 and entered grade 10.

TABLE 12

TOTALS FOR CITY ONE

Grade	Semesters spent	Semesters progressed	Semesters failed	Semesters skipped	Progress rate
			Boys		
7B	486	456	30		.938
7A	469	441	28		.940
8B	449	411	38		.915
8A	334	335	28	29	1.002
9B	371	344	27		.927
9A	363	354	9		.975
			Girls		
7B	544	517	27		.950
7A	529	496	33		.937
8B	491	476	15		.969
8A	391	406	17	32	.963
9B	357	342	15		.957
9A	438	435	3		.993
			Boys and girls		
7B	1030	973	940		.944
7A	998	937	61		.938
8B	940	887	53		.943
8A	725	741	45	61	1.022
9B	728	686	42		.942
9A	801	789	12		.985

If this is true, then both the ninth and the tenth grades of the 6-3-3 schools probably contain a larger percentage of pupils of low ability than do the same grades in 8-4 schools. As a result more failures are to be expected in 6-3-3 schools in these grades. And again, if this be true, the progress rates of 6-3-3 schools in these grades would therefore tend to be lower than those for the more rigidly selected groups of the 8-4 schools in the same grades; hence the gaps in the two types of schools are not comparable because of a difference in the ability of the pupils involved.

6. The Gap Considered as the Point of Entrance to Senior High School

What is the success of pupils in their first year of senior high school in the two types of schools? The junior high school is said to assist pupils in making the transition to senior high school by gradually introducing them to the type of curriculum and methods of study, recitation, and general administration which they will find in senior high. They are therefore better prepared to meet the new situation of senior high school after the training received in junior high (5, pp. 11-12).

If junior high schools do succeed in helping pupils make this transition, then the pupils' records in the first year of senior high school should show fewer failures in 6-3-3 schools than in 8-4 schools. And if there are fewer failures, then the progress rates during the first year of senior high school should be higher for the 6-3-3 schools than for the 8-4 schools.

The rate for the first semester of 8-4 schools (grade 9B) is .874 and that for the first semester of 6-3-3 schools (grade 10B) is .824; the rates for the second semester are .886 and .887, respectively. According to these progress rates, pupils in their first semester of senior high school have less success in 6-3-3 schools than in 8-4 schools; and pupils in their second semester in senior high are as successful in one type of school as in the other.

Although the rate in the first semester of senior high is lower for the 6-3-3 type schools, does this mean a larger gap from the preceding half-grade? The rate drops .090 upon entrance to senior high in 8-4 schools, but .115 in 6-3-3 schools, indicating that there is a slightly larger gap in the 6-3-3 schools.

The Drop in Progress Rates Upon Entrance to Senior High School

Type of School	Preceding the gap	Following the gap	Amount of drop
8-4	.964	.874	.090
6-3-3	.939	.824	.115

Consideration must be given to the fact that grade 9 constitutes the first year of senior high for 8-4 schools while grade 10 is the first year in 6-3-3 senior high schools. The work in these grades is not strictly comparable. However, we may take the stand that the curriculum in each type of school ought to be adapted to the ability and previous training of the pupils, and that if it is not so adapted it is one of the weaknesses of that school system. Hence we are justified in expecting that the system as a whole should be organized and administered so that pupils are reasonably successful in all grades. An excessive rate of failure at any point is an indication of probable weakness there.

7. Conclusions and Findings

1. Since the progress rate of the combined 8-4 schools for grade 9B is .09 lower than the rate in grade 8A, this is evidence of a large gap in 8-4 schools between grades 8A and 9B.
2. Since the progress rate of the combined 6-3-3 schools in grade 9B is only .024 lower than the rate in grade 8A, this is evidence of only a small gap in 6-3-3 schools between grades 8A and 9B.
3. In 8-4 schools more than three times as many pupils fail in 9B as in 8A, while in 6-3-3 schools only one and one-half times as many pupils fail in 9B as in 8A.
4. A gap between grades 8A and 9B is found in each of the 8-4 city systems.
5. The gap between 8A and 9B in two of the four 6-3-3 cities appears large because the records in 8A from these two cities were few in number and unusual in kind.
6. Since the progress rate of the combined 6-3-3 schools is .115 lower in grade 10B than the rate in grade 9A, this is evidence of a large gap in 6-3-3 schools between grades 9A and 10B.
7. The gap which formerly occurred between grades 8A and 9B in 8-4 type schools has apparently not been bridged by the 6-3-3 type of organization, but merely postponed one year.
8. The progress rate for the first semester in senior high school is lower in 6-3-3 schools (grade 10B) than in 8-4 schools (grade 9B).
9. The amount of drop in the progress rate upon entrance to senior high school is greater in 6-3-3 schools than in 8-4 schools, indicating a larger gap in the 6-3-3 schools.

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